

RESEARCH METHODS IN CLINICAL PSYCHOLOGY, PSYCHIATRY, AND THE MENTAL HEALTH PROFESSIONS

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Introduction

Knowledge in psychology and its allied disciplines is collected by specific methods. Put another way, any psychological knowledge (or "truth") is as good as the method used to establish it. So it is with clinical psychology, psychiatry, and the mental health areas. The task is to collect knowledge about "abnormal behaviour", "problem behaviour", "deviance", or "mental disorder" (depending on which term is preferred).

At the heart of psychological methods is the experiment. Put simply, the research method is either experimental and non-experimental. However, within this distinction are many variations, and variations within variations. The aim of this book is to give a flavour of the diverse methods used in clinical psychology, psychiatry, and the mental health professions. There are classic studies and less well-known ones.

Undoubtedly there is an overlap between the methods, particularly when research is multi-method, and it is often splitting hairs as to how to categorise research. No claim is made to be definitive, only to show the variety.

The first chapter is about the experimental method, which underpins (rightly or wrongly) the whole of psychology. The next chapter describes the methods that is almost an experiment (quasi-experiments), but technically they do not fulfil the criteria for a "true" experiment. Clinical trials are discussed in chapter three. Though they overlap with experimental and quasi-experimental designs, they are given special place because of the importance of establishing the efficacy of any treatment or therapy.

Chapter four is about the observation of behaviour, both directly and indirectly. While chapters five and six are about asking questions. Chapter 6 is separate because of the importance of psychometric tests in clinical psychology, psychiatry, and the mental health professions (again rightly or wrongly).

Case studies make use of many others techniques, and appear in chapter 7. While the last two chapters are about specialised methods used in clinical psychology, psychiatry and the mental health professions. Chapter 8 is about statistical techniques, and chapter 9 describes physiological techniques.

Hopefully the reader will gain a flavour of the variety of research methods available, and it may give ideas for projects and further research.

1. EXPERIMENTS

- * LAB EXPERIMENTS
- * EXPERIMENTS WITH SINGLE OR SMALL NUMBER OF PARTICIPANTS
 - AB design
 - ABAB design
 - Alternating treatment design
 - Multiple baseline design
- * LAB EXPERIMENTS WITH NON-HUMAN ANIMALS
- * FIELD EXPERIMENTS

Within psychology generally, the experiment is the most commonly used method. This is because it allows the researcher to control the variables, and focus on specific areas to study (ie: the independent and dependent variables). It is the only method by which researchers can talk about cause and effect. Clinical trials are often experimental designs (chapter 3).

A "true" experiment, rather than a "quasi-experimental" design (chapter 2) will have a number of controls:

i) The random assignment of the participants to the conditions (known as randomisation. However, it should be noted that "this procedure does not eliminate or even reduce individual differences but simply distributes those differences between the groups" (Davis 1995 p61).

ii) Standardised procedures in all conditions, except for the independent variable.

iii) Control over the variables in the experiment. In particular, the independent variable (controlled by the experimenter) can be clearly seen to lead to behaviour change (the dependent variable). Confounding variables should be eliminated if possible or compensated for.

Otherwise confounding variables can render an experiment's results as untrustworthy; ie: it is not clear that the independent variable caused the dependent variable.

There are three main designs for an experiment: independent design (sometimes called between-participants design), repeated measures design (within-participants design), and matched design. Single participant designs are classed as different. Table 1.1 shows the main advantages and disadvantages of the three experimental designs.

INDEPENDENT DESIGN	REPEATED MEASURES DESIGN	MATCHED DESIGN
DETAILS		
Random allocation of participants to one condition only	Each participant takes part in all conditions	Participants are paired together based on similarity in relevant variable, and then each do one condition only
ADVANTAGES		
- no order effects *	- each group identical	- advantages of other designs
- keeps participants naive about experiment	- less participants needed	
DISADVANTAGES		
- no guarantee that groups will be similar	- order effects *	- difficult to match, particularly when pre-test needed
- need many participants	- participants not naive when repeating experiment	- if one participant of pair leaves, then other one's data cannot be used

* Order effects are where the participation in one condition influences participation in the later condition. For example, the participants may be tired (fatigue effect) or their performance improves the second time (practice effect).

Table 1.1 - Main advantages and disadvantages of the three main experimental designs.

LAB EXPERIMENTS

Here the participants come to the lab in order to take part in the experiment. In the main, they know they are involved in being researched.

There are always problems of participants reacting to the experiment (ie: changing their behaviour), and this is heightened in the lab experiment. The terms "demand characteristics" and "evaluation apprehension" are often used. The latter refers to participant's desire to play the role of "good participant" and do what they think the experimenter wants them to do. Masling (1966) notes the opposite situation: the "screw you effect".

"Evaluation apprehension" is where the participant is self conscious at being evaluated and tries harder. In both cases, the participants are not behaving normally.

These could be seen as confounding variables.

Table 1.2 lists the main advantages and disadvantages of using the lab experiment. Example 1A shows an experiment as used in clinical psychology.

ADVANTAGES

- establish cause and effect relationship between variables
- control of participants and variables
- comparison of participants
- replication possible because of standardised procedures used
- measure behaviour precisely in lab

DISADVANTAGES

- low ecological validity; ie: artificial study of behaviour
- narrowness of independent and dependent variables
- measures behaviour for short limited period only
- experimenter effects
- demand characteristics and evaluation apprehension

Table 1.2 - Main advantages and disadvantages of lab experiments.

EXAMPLE 1A: LAB EXPERIMENT

Broverman, I.K; Broverman, D.M; Clarkson, F.E; Rosenkrantz, P.S & Vogel, S.R (1970) Sex role stereotypes and clinical judgments of mental health, *Journal of Consulting and Clinical Psychology*, 34, 1-7

Seventy-nine mental health professionals (clinically-trained psychologists, psychiatrists and social workers) were asked to describe either a normal adult male, a normal adult female, or a normal adult using a list of 122 bipolar characteristics supplied by the researchers. There was a close similarity between the descriptions of the normal adult and the normal male adult. These included characteristics like "independent", "objective", and "competitive".

While the description of the normal adult female tended to be more negative with terms like "worried about appearance" and "emotional". The stereotype of "normality" tends to be seen as male: "female psychology was seen unequivocally as less desirable than male psychology" (Nicolson 1997).

EXPERIMENTS WITH SINGLE OR SMALL NUMBER OF PARTICIPANTS

There are situations where the number of participants are limited, even to one person. This is often the case in clinical situations, where this methodology has its origins.

It is still possible to maintain the rigour of the experimental method. Though it appears to be similar to the repeated measures design, it is technically classed as an unrelated design, particular for the statistical test used (Coolican 1998). The only requirement is that the scores are obtained independent of each other.

Table 1.3 shows the main advantages and disadvantages of this method. Example 1B shows the use of a single participant experiment in clinical psychology.

ADVANTAGES

- useful when few participants are available
- useful when a lot of time and/or cost required to prepare and/or train participants

DISADVANTAGES

- results cannot be generalised like in the lab or field experiment
- it is dependent on the participants because if they drop-out, the experiment stops

Table 1.3 - Main advantages and disadvantages of experiments with single or small number of participants.

EXAMPLE 1B: EXPERIMENT WITH A SINGLE PARTICIPANT

Watson, J.B & Rayner, R (1920) Conditioned emotional reactions, Journal of Experimental Psychology, 3, 1, 1-14

The researchers used a nine month old boy called "Albert B". The aim was to see if he could be conditioned to be afraid of a white rat.

Initially he was presented with the rat and showed no fear reaction (control condition). The experiment began when "Albert" was 11 months 3 days old: as he began to reach for the rat, a metal bar was struck loudly behind his head. This made "Albert" jump violently. This was done twice that day. The fear was created after seven pairings of the loud noise and the rat.

The researchers write with triumph: "The instant the rat was shown, the baby began to cry. Almost instantly he turned sharply to the left, fell over on left side, raised himself on all fours and began to crawl away so rapidly that he was caught with difficulty before reaching the edge of the table".

This research is now seen as highly unethical and thereby unacceptable: "Watson and Rayner were knowingly deciding to cause him distress" (Gross 1990).

The main types of design for single participant experiments are:

- AB design
- ABAB design
- Alternating treatment design
- Multiple baseline design.

They are all used with therapy.

AB Design

This involves a period of no treatment compared with a period of treatment (Figure 1.1; example 1C). The ABA design is a variation, which involves a period of no treatment after the treatment, to see if the behaviour returns to the baseline (Wilson 1995).

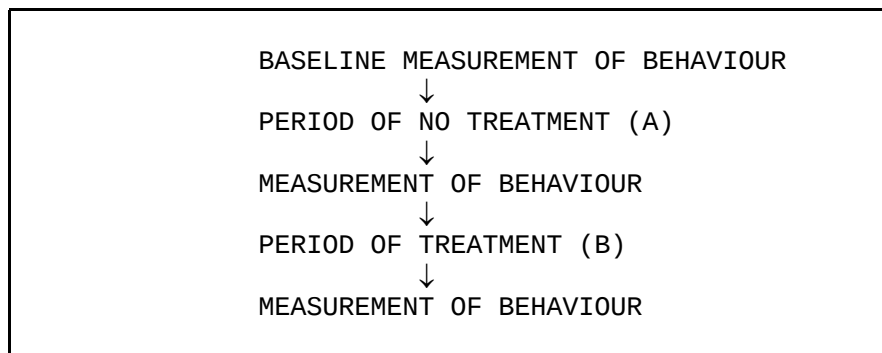


Figure 1.1 - AB design.

EXAMPLE 1C: AB DESIGN

Sandman, C.A; Barron, J.L; Coinella, F.M et al (1987) Influence of naloxone on brain and behaviour of a self-injuring woman, *Biological Psychiatry*, 22, 899-906

This is an experiment with a 21 year old woman who suffered from epilepsy, and was prone to deliberately self harming herself. For about ten days, she was given naloxone (the independent variable), and then a saline solution (placebo) for the following ten days.

There was a reduction in the frequency of self harm (the measure of the dependent variable) with the drug, but not with the placebo. This is seen as the drugs being effective.

ABAB design

The ABAB design involves a period of treatment followed by withdrawal of the treatment, and then

reinstatement of treatment later (figure 1.2; example 1D).

There are ethical issues here with the withdrawal of treatment when it appears to be working.

Peck (1985) also includes BAB design, where treatment is interrupted for a period, and then reinstated.

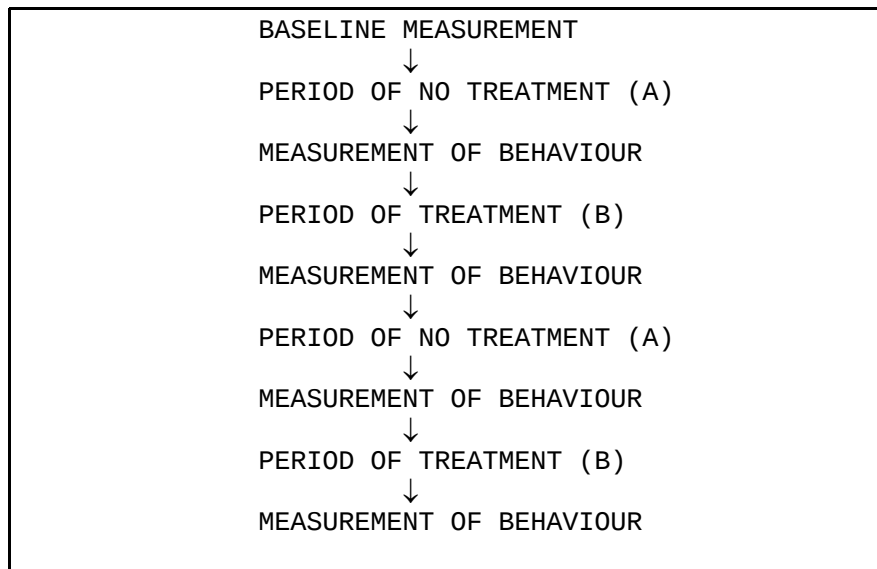


Figure 1.2 - ABAB design.

EXAMPLE 1D: ABAB DESIGN

Hall, R.V et al (1971) The teacher as observer and experimenter in the modification of disrupting and talking-out behaviours, *Journal of Applied Behavioural Analysis*, 4, 141-149

A ten year old boy with learning difficulties tended to "talk out" in class, and thereby disrupt the lessons. The experiment to test treatment to stop this undesirable behaviour had four phases: no treatment (A1), treatment (B1), no treatment again (A2), and treatment again (B2).

The "no treatment" phases involved the teacher reprimanding the "talking out" behaviour, while for the "treatment" phases, the "talking out" was ignored and attention given when the boy was quiet or answered questions appropriately. Each phase lasted five days, and the dependent variable was the number of "talk outs" per day.

The approximate average number of "talk outs" per phase of the experiment were 4 per day (A1); 0.8 (B1); 3 (A2); and 0.8 (B2). By the end of the treatment phases, there were no "talk outs" per day. The use of attention as a reinforcer for appropriate behaviour is part of behaviour modification programmes.

Alternating treatment design

Alternating treatment design or ABACA design (Rosenhan and Seligman 1995) involves a period with one treatment followed by a period with another treatment (figure 1.3; example 1E).

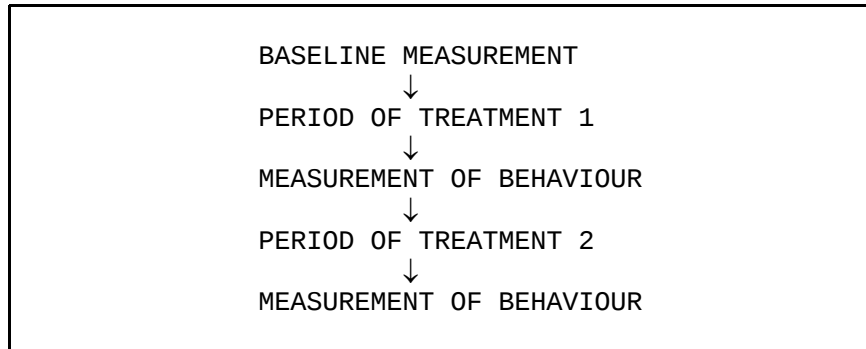


Figure 1.3 - Alternating treatment design

EXAMPLE 1E: ALTERNATING TREATMENT DESIGN

Moras, K; Telfer, L and Barlow, D (1993) Efficacy and specific effects data on new treatments: a case study strategy with mixed anxiety and depression, *Journal of Consulting and Clinical Psychology*, 61, 412-20

A study of two types of therapy with an individual suffering from anxiety and depression. Initially there was a two week period to assess the level of anxiety and depression (A1). The first period of treatment was "anxiety control treatment" for six sessions (B). Anger control treatment involves training in breathing exercises to reduce anxiety, and cognitive restructuring for anxiety-related thoughts.

Next was an assessment week (A2). Assessment was measured by the Beck Depression Inventory (BDI). Then followed six sessions of treatment with interpersonal therapy (C). The focus is upon insight of the client's behaviour and causes of the depression. Finally, a week of assessment (A3).

Throughout the whole experiment, the self-reported level of anxiety and depression declined. This showed that both treatments worked for both anxiety problems.

Multiple baseline design

This design involves measuring several problems simultaneously. Usually where withdrawal or reversals of treatment is not possible (or acceptable). This may be done across participants (one participant at a time), across problems (one problem at time), or across settings (in one setting at a time) (Peck 1985). Example 1F shows

multiple baselines across participants and across problems.

Richards et al (1999) also include "the ABABAB design". While Berryman and Cooper (1982) add:

a) The changing criteria design - usually applied to therapy situations, the goals of the therapy would change in each session. For example, showing less of the addictive behaviour after each therapy session;

b) Periodic treatment design - again with therapy, this is where it is difficult to define when treatment stops. For example, clients in cognitive behavioural therapy (CBT) practice their new "positive thinking" techniques after the therapy sessions. In both cases, there may be variable times between each therapy session.

EXAMPLE 1F: MULTIPLE BASELINE DESIGN

Barton, E.S et al (1970) Improvements of retardates' mealtimes behaviours by time-out procedures using multiple baseline techniques, Journal of Applied Behaviour Analysis, 3, 77-84

This study is based in a hospital ward of males with learning difficulties, and the problems of mess at mealtimes. Using the concept of "time out" (ie: removing a patient from the dining room) for undesirable behaviour. The undesirable behaviours included stealing food, eating with their fingers, and eating spilled food. "Time out" is based on behaviour modification principles.

Though the ward contained a large number of patients, "time out" was applied to individual patients for individual problems one by one. The technique was responsible for improvements in mealtime behaviour.

LAB EXPERIMENTS WITH NON-HUMAN ANIMALS

Because clinical psychology is about studying human problem behaviour, it tends not to study non-humans. However there may be occasions when research with non-human animals can give useful findings to use with humans.

Animals may be used to test psychotropic drugs (as in example 1G) or to study selective breeding of particular genes (example 1H). While Table 1.4 gives the main advantages and disadvantages of this method.

ADVANTAGES

- can be used where humans couldn't
- greater control of variables
- whole process of development can be observed, and several generations studied in relatively short period of time
- similar physiology among mammals

DISADVANTAGES

- ethics of use and of inflicting pain and suffering
- ignores role of language and culture in human behaviour
- flexibility of humans to learn
- cognitive processes, like attribution, cannot be studied
- physiology is different

Table 1.4 - Main advantages and disadvantages of lab experiments with non-human animals.

EXAMPLE 1G: LAB EXPERIMENT WITH NON-HUMAN ANIMALS

Porsolt, R.C; Anton, G; Blauet, N & Jalfre, M (1978) Behavioural despair in rats. A new model sensitive to anti-depressant treatment, European Journal of Pharmacology, 47, 579-84

This study reports the use of anti-depressants with rats showing passivity (learned helplessness), which is a common symptom of human depression.

Rats were placed in a cylinder of water for 15 minutes. Rats can swim, but do not like water, and so search immediately for escape. They quickly learn that escape from the "swim test" is not possible. They, then, adopt a passive posture, and remain in this position when retested 24 hours later. This is control group.

In the experimental condition, the rats were given anti-depressants before retesting, and did not produce the passive posture in the "swim test".

EXAMPLE 1H: LAB EXPERIMENT OF SELECTIVE BREEDING

Broadhurst, P.L (1975) The Maudsley reactive and non-reactive strains of rats: a survey, Behavioural Genetics, 5, 299-319

The "Maudsley Reactive rats" are a specially bred group, which, over a number of generations, shows high emotional reactivity.

Emotional reactivity is measured by the amount of defaecation when placed in an unfamiliar environment. A control strain of rats was also bred with low emotional reactivity.

This study is used to support the argument for the inheritance of the characteristic of anxiety.

FIELD EXPERIMENT

This is an experiment that takes place in a natural setting. It attempts to maintain all the control and rigour of the experimental method, but outside the lab. The experimenter goes to the participants, who may not know they are involved in some cases.

In example 1I the participants are aware that they are involved in treatment and not necessarily that it is an experiment.

In table 1.5 are the main advantages and disadvantages of this method.

ADVANTAGES

- natural settings used; ie: high ecological validity
- certain topics not possible to study in lab environment

DISADVANTAGES

- less control over variables and participants than lab experiment
- where possible to control, sample is not representative
- replication difficult

Table 1.5 - Main advantages and disadvantages of the field experiment.

EXAMPLE 1I: FIELD EXPERIMENT

Halford, W.K et al (2001) Helping the female partners of men abusing alcohol: a comparison of three treatments, *Addiction*, 96, 1497-1508

This research compared three different treatments to help reduce stress in female partners of men with problem drinking. Sixty-one married Australian women whose husbands drank heavily were randomly divided in three groups (using random number tables).

The three conditions were supportive counselling, stress management, or alcohol-focused couples therapy. Each treatment was for 15 x 1 hour sessions (the independent variable is the type of treatment). The measures of the dependent variable were female's stress, alcohol consumption of males, and "relationship functioning". These were recorded at pre-test, immediate post-test, and 6 month follow-up.

All the three conditions produced a reduction in the women's stress, but no significant fall in men's drinking or in relationship problems.

2. QUASI-EXPERIMENTAL DESIGNS

- * QUASI-EXPERIMENT
- * NATURAL EXPERIMENT
- * PSEUDO-EXPERIMENT
- * OTHER VARIATIONS
 - Pre-experiments
 - Only pre-existing groups
 - Interrupted time-series design
 - Non-equivalent control groups
 - Ex post facto experiments
 - Analogue experiments
 - Heritability studies
 - Twin studies
 - Adoption studies

There are many designs that are nearly experiments (ie: quasi-experiments). Different terms are used for these methods, and there is sometimes overlap. This chapter explores a selection of these "nearly experiments".

QUASI-EXPERIMENT

Cook and Campbell (1979) define quasi-experiments as "experiments that have treatments, outcome measures, and experimental units, but do not use random assignment to create the comparisons from which treatment-caused change is inferred".

Many pieces of research are classed as experiments when in fact they are quasi-experiments. This is important because the experiment is the only method by which causation can be established. Quasi-experiments do not have the randomisation of participants or the clear control of variables found in "true" experiments.

In some cases, it can be like splitting hairs as to whether the independent variable is really manipulated by the researchers (Coolican 1994).

Raulin and Graziano (1995) compare the experiment and the quasi-experiments (table 2.1). Table 2.2 shows the key differences between the experiment, the quasi-experiment, and the pre-experiment. While table 2.3 contains the main advantages and disadvantages of this method. Example 2A is a quasi-experiment because the participants (ie: psychiatrists) are not randomly allocated to the two conditions. They either work in the UK or the USA.

EXPERIMENT - states causal hypothesis - manipulates independent variable - randomisation of participants to conditions - systematic procedures - uses controls for establishing validity QUASI-EXPERIMENTS - states causal hypothesis - independent variable not manipulated, but controlled - cannot use randomisation - specific procedures used - uses some controls for establishing validity

Table 2.1 - Comparison of experiment and quasi-experiment.

PRE-EXPERIMENT	QUASI-EXPERIMENT	EXPERIMENT
CONTROL GROUP		
usually not	sometimes	always
RANDOM ASSIGNMENT OF PARTICIPANTS TO CONDITIONS		
no	no	yes
CONTROL OF CONFOUNDING VARIABLES		
low level	some control	high level

Table 2.2 - Key differences between the experiment, quasi-experiment, and pre-experiment.

ADVANTAGES - as close as possible to experimental design - useful where not possible to do experiment; eg: due to ethical concerns DISADVANTAGES - not experiment, so caution about claiming causality - questions about generalisability of findings

Table 2.3 - Main advantages and disadvantages of quasi-experiment.

EXAMPLE 2A: QUASI-EXPERIMENT

Cooper, J.E; Kendall, R.E; Gurland, B.J; Sharples, L;
Copland, J.R.M & Simon, R (1972) Psychiatric diagnosis in New York
and London, Maudsley Monograph no.20, Oxford University Press:
London

This is part of the "Cross-National Project for the Study of
the Diagnosis of Mental Disorders in US and UK", which began in
1965. Specifically this study focused on the diagnosis of
schizophrenia by staff at the New York State Psychiatric
Institute and the Institute of Psychiatry in London.

The study involved an examination of hospital patients by
project members, and the use of videotapes of the patients to aid
diagnosis along with case records.

The results show clear differences in the diagnosis process
by US and UK psychiatrists, with the former diagnosing more cases
as schizophrenia.

For example, in the case of one patient: all the New York
State psychiatrists diagnosed as schizophrenia, while about a
quarter of the UK psychiatrists diagnosed as affective disorder.
There was only full agreement between the two sets of
psychiatrists on one of the eight videotaped patients.

NATURAL EXPERIMENT

The investigator observes the consequences of some
natural event on individual's behaviour. There may be a
control group, but the researcher did not or could not
manipulate the independent variable.

Raulin and Graziano (1995) argue that natural
experiments are strong quasi-experimental designs, such
that the researcher "would feel justified in drawing
rather strong causal conclusions". They give the example
of comparing the effects of experiencing a tornado with
those who never experienced the event. The event is
random; the participants are assigned randomly on that
basis; one group experiences the independent variable
(the tornado); and both groups are measured for the
dependent variable.

Table 2.4 lists the main advantages and
disadvantages of this method, and example 2B is its use
in a UK study.

EXAMPLE 2B: NATURAL EXPERIMENT

Hawton, K et al (1999) Effect of a drug overdose in a
television drama on presentations to hospital for self-poisoning,
British Medical Journal, 10/4, 972-977

This study made use of an episode of the television hospital
drama, "Casualty" (shown on 2nd November 1996), which featured a
paracetamol overdose.

Using the data from 49 UK Accident and Emergency
departments, the researchers compared the number of admissions

for overdose three weeks before the programme, and the three weeks following. In the baseline period 2127 patients presented with overdose compared to 2276 after the programme.

All overdose admissions increased by 17% within the first week after the programme; with an overall average increase of 7% in the three weeks after the programme. Paracetamol overdose admissions increased by 19% in the first week, and had an average increase of 12%.

Detailed interviews with 32 patients in the week after the programme found that 20% said they had been influenced by the programme to overdose, and 17% influenced to choose paracetamol. The use of paracetamol for overdose was double among regular viewers of the programme.

ADVANTAGES

- studying the effects of natural events
- clues to cause and effect
- some things not possible to control or study in an experiment
- not unethical

DISADVANTAGES

- little information on participants
- lack of control of confounding variables
- no random allocation of participants to groups
- no baseline measure of behaviour
- not replicable
- susceptible to retrospective bias

Table 2.4 - Main advantages and disadvantages of the natural experiment.

PSEUDO-EXPERIMENT

Experiments using gender, for example, as the independent variable cannot truly randomise the participants. It is not possible for the participants to be in either condition. Here gender is an example of a "quasi-independent variable" (Leary 2001). Example 2C shows the situation where whether the individual has schizophrenia or not is the independent variable.

EXAMPLE 2C: PSEUDO-EXPERIMENT

Daprati, E et al (1997) Looking for the agent: an investigation into consciousness of action and self-consciousness

in schizophrenic patients, Cognition, 65, 71-86

A group of 30 patients with schizophrenia and a control group had to perform the same task. Of the patients with schizophrenia, thirteen reported hallucinations and seven delusions of control (ie: the belief that their behaviour and thoughts are controlled from outside).

Using a gloved hand, which was out of sight, the participants had to make hand movements that were being filmed. The task was to say whether on the television screen were their hand movements or another person's.

The task was about the ability to self monitor behaviour. Schizophrenics suffering from hallucinations or delusions of control made the most mistakes.

OTHER VARIATIONS

Here is a selection of quasi-experimental designs. There is often overlap in the terms used and the meanings. This methodology is not as clearly defined as the experimental method.

PRE-EXPERIMENT

Fife-Schaw (1995) describes pre-experiments as having no control group, and the study is measured after the event only. In clinical trials, this is called a "one group post-test design" (chapter 3).

Singleton and Straits (1999) talk about three types of pre-experiment design:

i) One shot case study - measurement of one group after the event only (figure 2.1).



Figure 2.1 - One shot case study.

ii) One group pre-test post-test design - as (i) but a baseline measurement is also possible (figure 2.2).

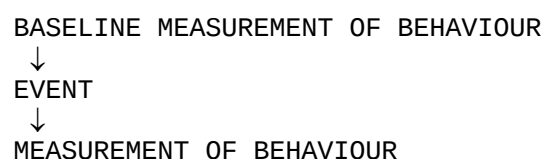


Figure 2.2 - One group pre-test post-test design.

iii) Static group comparison - the comparison of two groups after the event only (figure 2.3).

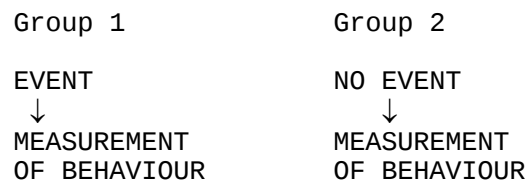


Figure 2.3 - Static group comparison.

ONLY PRE-EXISTING GROUPS

Similar to pseudo-experiments, but pre-existing groups used (Coolican 1998) ¹. Therefore there is no possibility of randomisation of the participants.

Example 2D is where the groups are already determined: homeless and rehoused or stable housing. While example 2E used children injured in road traffic accidents or sports injuries.

EXAMPLE 2D: ONLY PRE-EXISTING GROUPS

Vostanis, P; Gratton, E & Cumella, S (1998) Mental health problems of homeless children and families: longitudinal study, British Medical Journal, 21/3, 879-902

This study was interested in the effect of homelessness on mental health. Using 58 families (with 103 children aged between 2-16 years old) that were homeless, then rehoused, and a comparison group of 21 families (with 54 children) in stable housing.

The main measures of mental health were taken one year after the rehousing. 26% of the mothers in the rehoused group showed "possible mental disorder" (5% in the comparison group), and 39% of the children (versus 11%). Both figures are significantly different to the comparison group. This shows the persistence of mental health problems after rehousing.

EXAMPLE 2E: ONLY PRE-EXISTING GROUPS

Stallard, P; Velleman, R & Baldwin, S (1998) Prospective study of Post-traumatic Stress Disorder in children involved in road traffic accidents, British Medical Journal, 12/12, 1619-1623

A study of 119 children (aged 5-18 years old) admitted to Bath Hospital (in 1996-97) after a road traffic accident and 66 children with sports injuries. Post-traumatic Stress Disorder

¹ Raulin and Graziano (1995) prefer the term "differential research design".

could be diagnosed in 41 (34.5%) of the first group and 3% (2 children) in the latter group.

Of the children seen as having Post-traumatic Stress Disorder, significant associations were isolated: more likely in girls; those children with a experience of trauma in the previous 12 months; and the perception of threat of death. But not an association with age of child, or actual severity of injuries.

INTERRUPTED TIME-SERIES DESIGN

This method compares data before and after particular events, but usually where only one group used. Measurement is traditionally taken more than once, and over a period of time, rather than the snap-shot measurement of other methods. This can be similar to as longitudinal study.

Cook and Campbell (1979) note a number of confounding variables during a study over a long period of time:

- Maturation - changes due to participants ageing, particularly with children.
- History - events that influence behaviour other than those being studied.
- Testing - repeated measurement influences behaviour, and knowledge that individuals are being studied changes their behaviour. The latter is sometimes called the "Hawthorne effect" (Roethlisberger and Dickson 1939).
- Instrumentation - changes in the methods of collection of the data over the study.
- Selection - groups not equivalent when groups being compared. Multiple time-series design uses more than one group.
- Attrition - loss of participants over time can bias the sample of participants left in the study.

Often the technique is used in social science to measure the general effect of a change in the law. The classic example is a change in the speed limit and traffic accidents. Table 2.5 and example 2F show some examples of how this method can be used.

Leary (2001) distinguishes a number of variations of this design:

- i) Simple interrupted time-series design (figure

2.4).

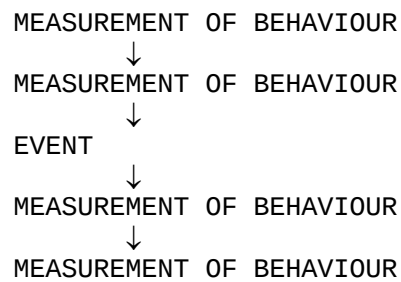


Figure 2.4 - Simple interrupted time-series design.

ii) Interrupted time-series design with reversal - this looks at the effect of the change, and then later the reversal of that change (figure 2.5).

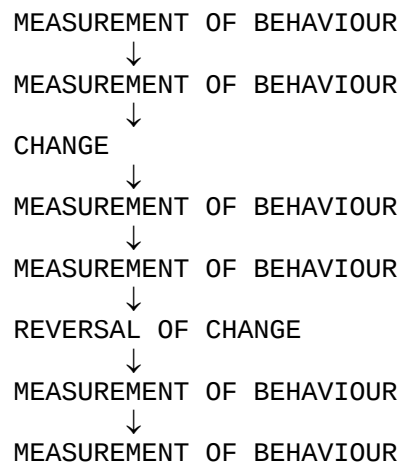
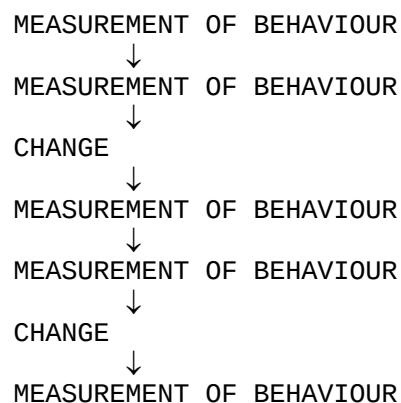


Figure 2.5 - Interrupted time-series design with reversal

iii) Interrupted time-series design with multiple replications - as (i) but the event being studied occurs a number of times (figure 2.6).



↓
MEASUREMENT OF BEHAVIOUR

Figure 2.6 - Interrupted time-series design with multiple replications.

iv) Control group with interrupted time-series design - similar to (i) but with comparison or control group (figure 2.7). Fife-Schaw (1995) calls this "time series with non-equivalent control group (TSNECG)".

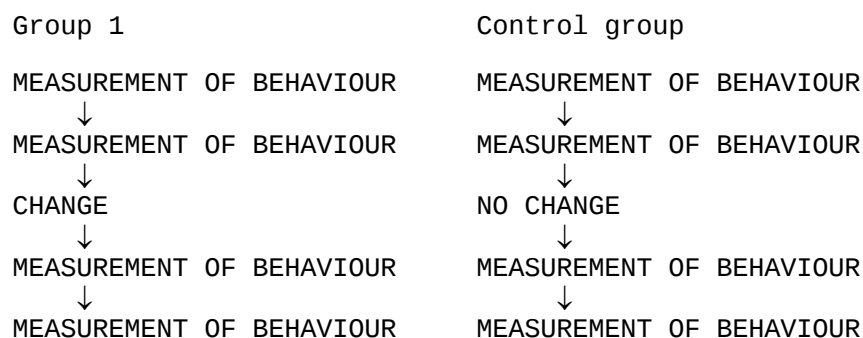


Figure 2.7 - Control group with interrupted time-series design.

SITUATION	EXAMPLE
- change in the methods used for suicide based on availability of methods	- 1960s domestic coal gas most common; introduction of natural gas (non-toxic) saw reduction in poisoning by gas as a method of suicide (Taylor and Gilmour 1996)
- change in criminal behaviour and homicides by mental disordered individuals since deinstitutionalisation and "Care in the Community"	- difficult to measure, but possible increase in homicides (Muijen 1995); increased crime by schizophrenics in Camberwell, south London, but part of increase in crime generally in that area (Wessely 1997)
- change in suicides among schizophrenics as results of deinstitutionalisation	- Swedish study suggests schizophrenics had 13.2 times greater risk of suicide than the average in psychiatric hospital (1976-80), and 47.8 times greater risk outside hospital (1991-5) (quoted in Dalrymple 2000)

Table 2.5 - Examples of how the interrupted time-series design can be used in clinical psychology.

EXAMPLE 2F: INTERRUPTED TIME-SERIES DESIGN

Graziano, A.M (1974) *Child Without Tomorrow*, Pergamon: Elmsford, New York

A study of disruptive behaviour by four children with autism. The behaviour was monitored over a year, then relaxation training was introduced for a year, and the behaviour was monitored for the following year.

The average number of disruptive behaviours were around 30 for a period measured before the treatment. This dropped during the treatment, and reached zero in the third year. There appears to be apparent benefits to the training.

NON-EQUIVALENT CONTROL GROUP DESIGN (NECG)

It may not be possible to randomise the participants, or have matched groups, or treat the conditions the same. For example, baseline measure for one group but not another. Example 2G is a case where circumstances dictate the make up of the groups being used.

Here Leary (2001) distinguishes two variations:

a) Non-equivalent group post-test only design - measurement made after the treatment (similar to natural experiments) (figure 2.8).

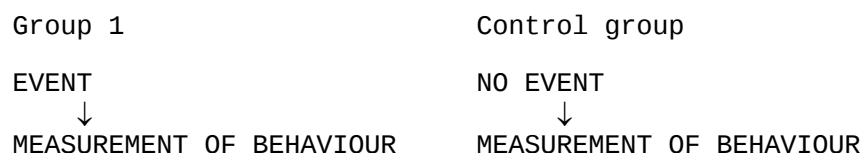


Figure 2.8 - Non-equivalent group post-test only design.

b) Non-equivalent group pre-test post-test design - baseline measurements taken as well (figure 2.9).

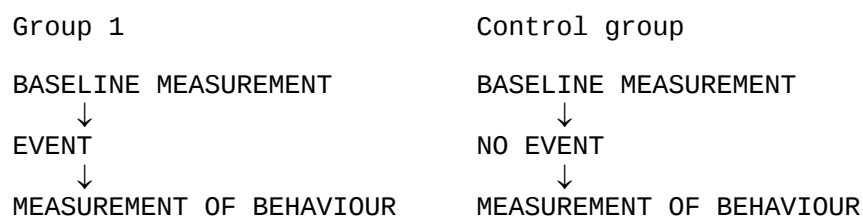


Figure 2.9 - Non-equivalent group pre-test post-test design.

EXAMPLE 2G: NON-EQUIVALENT CONTROL GROUP DESIGN

Langer, E.J & Rodin, J (1976) The effects of choice and enhanced personal responsibility for the aged: a field experiment in an institutional setting, *Journal of Personality and Social Psychology*, 34, 191-198

A study of 91 residents in a Connecticut nursing home. Two similar floors were selected to compare. On one floor, the staff encouraged the residents to take control of decisions in the home (responsibility-induced group), while the residents on the other floor had the decisions made for them (control group). For example, the choice to have pot plants in their rooms compared to being told that they would have them (control group).

The responsibility-induced group showed lower mortality rates over the following 18 months (15% versus 30%). While in the short term, the responsibility-induced group were happier and more alert. Means of self-reported happiness of 5.44 versus 4.78.

The control group experienced learned helplessness, with a lack of control, which is linked to depression and negative health experiences.

EX POST FACTO EXPERIMENT

The dependent variable has already occurred and the attempt is made to find the independent variable. Robson (1993) calls these "retrospective experiments". In example 2H, the poor examination results have occurred and the researchers are looking for the attributional style that leads to depression.

EXAMPLE 2H: EX POST FACTO EXPERIMENT

Metalsky, G.I; Halberstadt, I.J & Abramson, L.Y (1987) Vulnerability to depressive mood reactions: toward a more powerful test of the diathesis-stress and causal mediation components of the reformulated theory of depression, *Journal of Personality and Social Psychology*, 52, 2, 386-393

A study to assess the response of introductory psychology course students to poor mid-term examination grades. The aim was to see if there was a relationship between attribution of the reason for poor grades and depression.

Mood and attributional style were measured. Students who made stable, global attributions (as measured by the Attributional Style Questionnaire) for their poor grades were more likely to be depressed.

An internal stable, global attribution would see the poor grades as due to their own failings (eg: "I am not intelligent enough"). While an external stable, global attribution would feel, for example, that the tests are always too difficult (ie: stable environmental cause).

The stable, global attributional style tends to encourage learned helplessness because the cause of failure is seen as unchanging. Learned helplessness is linked to depression.

ANALOGUE EXPERIMENT

Comer (1998) refers to this method as inducing lab participants to behave in ways that parallel real-life situations (example 2I).

One way of using this method to study abnormal behaviour is to induce characteristics of it in mentally healthy students, who are freely available to study. Vredenburg et al (1993) raises issues concerned with using students to study depression, even if the findings are similar to the clinical population.

There are ethical issues with such a technique, as well as the question of how artificial the induced behaviour may be.

If the technique is used appropriately: for example, with randomisation of participants, then it can be classed as an experimental method.

EXAMPLE 2I: ANALOGUE EXPERIMENT

Hiroto, D.S (1974) Locus of control and learned helplessness, *Journal of General Psychology*, 102, 187-193

This experiment attempted to create learned helplessness in a group of non-depressed volunteers.

There were three conditions: one group receives a loud noise in their headphones for a set period of time without any way of stopping it (inescapable noise group). The next group could control the noise (escapable noise group), and the control group had no noise. The inescapable noise condition attempted to induce learned helplessness; the feeling that unpleasant events cannot be escaped or controlled, which is a common characteristic of depression.

The second part of the experiment was a similar situation with a loud noise, but all three groups could control the noise. The inescapable noise group tended to be passive and make no attempt to use the controls available. The other two groups tended to turn off the noise. The importance of learning from past experiences has been shown here.

This is linked with the fact that many depressed individuals have experienced inescapable or uncontrollable stress prior to the depression.

HERITABILITY STUDIES

One of the great debates throughout psychology is the role of genetics versus environment on causing behaviour. Though it is a combination of both factors, attempts are made to pinpoint the exact role of each. In particular, to establish the influence of genes, by controlling or trying to remove the environmental factors. This is done by the use of twin studies and adoption studies.

Twin studies

Twin studies concentrate on identical (monozygotic; MZ) and non-identical (dizygotic; DZ) twins. MZ twins have the same genetic make-up. The ideal experiment would be to separate the MZ twins at birth, and raise them in different environments. Then to see if the twins showed the same behaviour, which must then be due to genes. This is the "MZ apart" twin study. A concordance rate is calculated, and if it was 100%, it would show that if one twin had the behaviour, then the other twin always did as well.

But, in reality, twin studies depend on volunteers: they may have been separated at any age, and the environments may not be that different. Bronfenbrenner (1986) reports correlation rates of 0.86 for particular behaviours when the "MZ apart" were reared in similar environments, and 0.26 when in different environments. Because of the many confounding variables, twin studies are thus quasi-experimental designs.

Jackson (1960) reviewing the studies, available at that time, of "MZ apart" for schizophrenia could only find two pairs of twins who were genuinely reared apart. These two pairs produced a concordance rate of 100%. While Gottesman and Shields (1972) report eight such studies giving seventeen pairs genuinely reared apart; the concordance rate for those twins was 62%. But the age of separation varied from "soon after birth" to "between 3-8 years old". In some cases, the twins were reunited.

Because of this problem and thus the small number of MZ twins raised separately, most studies compare the concordance rates of MZ twins reared together ("MZ together") with DZ twins reared in the same environment ("DZ together").

Gottesman and Shields (1972) make two predictions about heritability and "MZ together" and "DZ together" studies:

- a) if genetic differences are of no importance the concordance rates in MZ and DZ co-twins should be the same;
- b) if genes are important, MZ co-twins should be affected more often than DZ co-twins.

However, despite all the difficulties, twin studies are still useful (table 2.6; example 2J).

ADVANTAGES	DISADVANTAGES
- show genetic contribution to behaviour; ie: control environmental variables - more ethical than equivalent experiment - study over long period	- many studies based on retrospective data - small samples usually - different definitions of behaviour used in different studies - twins share same environment in womb, so cannot completely remove environmental influences from "MZ apart" studies

Table 2.6 - Main advantages and disadvantages of twin studies.

EXAMPLE 2J: TWIN STUDY - "MZ TOGETHER"/"DZ TOGETHER"

Gottesman, I & Shields, J (1972) Schizophrenia and Genetics: A Twin Study Vantage Point, Academic Press: New York

The researchers found 55 patients diagnosed between 1948-64, who were twins and would co-operate in the study. All of these co-twins were attending a London psychiatric clinic and were diagnosed as schizophrenic.

Twenty-four of the patients were a MZ twin, and the others a DZ twin. The study was interested in the concordance rate for schizophrenia in the twins. This study attempted to interview as many of the twins as possible. Thus diagnosis was done after face-to-face interview, which is not always the case in twin and adoption studies.

Using a criteria of "diagnosed with schizophrenia and hospitalised", the concordance rates were 42% for MZ twins and 9% for DZ twins. This difference is assumed to be due to the role of genetics in the disorder.

However different definitions produced different concordance rates: for example, "hospitalised with psychotic illness" (not schizophrenia) produced a rate of 54% for MZ twins and 18% for DZ twins. While a definition of "abnormal" gave rates of 79% and 45% respectively (Davison and Neale 1996).

Adoption studies

A similar logic is used for adoption studies as with "MZ apart" studies. If an adopted child develops a behaviour that their genetic parent(s) showed, but not the adopted parent(s), then that behaviour must be inherited.

Again the actual studies are dependent on volunteers. A real experiment would adopt the children at birth, and place them in the opposite environment to their parents. This cannot happen because of ethical

restrictions in psychology.

But adoption agencies use "selective placement", which tends to place the child for adoption with "suitable" parents: for example, better than average socio-economic security (Richardson 1994). However, adoption studies can still be useful (table 2.7; example 2K).

ADVANTAGES	DISADVANTAGES
- shows influence of inheritance - more ethical than equivalent experiment - study over long period	- age of adoption varies; ie: time spent with biological parents - small samples usually - retrospective data - reason for adoption of child: eg difficult child - environment of adoptive families usually good

Table 2.7 - Main advantages and disadvantages of adoption studies.

EXAMPLE 2K: ADOPTION STUDY

Kety, S et al (1968) The types and prevalence of mental illness in the biological and adoptive families of adopted schizophrenics. In Rosenthal, D & Kety, S.S (eds) The Transmission of Schizophrenia, Pergamon Press: New York

Using the detailed adoption records kept in the Danish Population Register, the researchers looked for children adopted young, who were born between 1924-47 in Copenhagen. There were 5483 child adopted by non-relatives in this period. They found 507 in this group who had been hospitalised with schizophrenia, and chose 33 to study.

A matched control group of 33 was also established. Then the researchers hunted for details of the biological relatives, and whether any of them had been diagnosed with schizophrenia (chronic, acute or borderline), uncertain schizophrenia or inadequate personality.

463 biological relatives of the 66 studied individuals were found and their names checked on the psychiatric registers. This study used only documents.

A rate of 8.7% was found for the schizophrenic adoptees group. This is 13 of the 150 biological relatives: 7 were definite schizophrenia, 4 uncertain, and 2 inadequate personality. This compared to 1.7% for the control group (ie 2 individuals).

Joseph (2000) criticises the broad definitions used in this study, among other problems.

Many quasi-experimental designs overlap with clinical trials (which are detailed in chapter 3). Table 2.8 compares the two types of methods.

QUASI-EXPERIMENT	CLINICAL TRIAL
POST-EVENT ONLY	
ONE GROUP Natural experiment One shot case study	One group post-test design
CONTROL GROUP Natural experiment Static group comparison	Post-test only control group
PRE AND POST-TEST MEASUREMENTS	
ONE GROUP One group pre-test post-test design Simple interrupted Time-series design	One group pre-post design
CONTROL GROUP Control group with Interrupted time-series design Non-equivalent group Pre-test post-test design	Pre-test/post-test control group

Table 2.8 - Comparison of quasi-experimental designs and clinical trials.

3. CLINICAL TRIALS

- * ONE GROUP POST-TEST DESIGN
- * ONE GROUP PRE-TEST/POST-TEST DESIGN
- * PRE-TEST/POST-TEST CONTROL GROUP (NO TREATMENT CONTROL)
- * PRE-TEST/POST-TEST CONTROL GROUP (PLACEBO CONTROL)
- * POST-TEST ONLY CONTROL GROUP DESIGN
- * CROSSOVER DESIGN
- * MULTICENTRE TRIALS

Any therapy or treatment needs to be assessed for its effectiveness or efficacy. The way to do this experimentally is to compare a group receiving the treatment or therapy with a group that does not. It would be expected that the former group shows a greater improvement over a set period of time.

Bradford Hill (1955) defines a clinical trial as "a carefully and ethically designed experiment with the aim of answering some precisely framed question".

However, there are a number of quasi-experimental variations of the clinical trial.

For a clinical trial to be carefully and ethical designed, there are a number of general problems to address. Particularly when aiming to design the "randomly controlled trial" (RCT), which is seen as the best type of clinical trial.

The general problems with clinical trials are:

i) The appropriate measurement of baseline and improvement.

It is necessary to use a measure that can be compared before and after the trial. In most cases today, self-reported questionnaires or psychometric tests are used. For example, the Hamilton Rating Scale for Depression is commonly used in anti-depressant trials.

ii) To control for equality in symptoms among the conditions. Strict inclusion and exclusion criteria are used to try to equalise the level of the disorder among the different conditions.

Vallejo et al (1987), in their double-blind study of imipramine and phenelzine ², recruited individuals with melancholia and dysthymic disorder using the criteria in table 3.1.

² Imipramine is tricyclic anti-depressant (TCA) eg: "Tofranil" (trade name); Phenelzine is MAO Inhibitor anti-depressant (MAOI) eg: "Nardil".

iii) To overcome the knowledge of who is in the control or placebo group by the researchers or the participants.

This problem is addressed by the use of "blinding". In an "open" trial, both researchers and participants know which group they belong to.

With "blind-at-randomisation", participants are divided into the conditions with no prior knowledge of the condition, but they may soon learn as the trial develops.

For example, the presence of side effects with the drug condition, and not with the placebo condition.

"Single-blind" design is where the participants cannot tell which condition, but the researchers know. But, best of all, is "double-blind" design, where neither the researcher nor the participants know which condition is which (Cohen and Posner 1995).

INCLUSION CRITERIA

- unmedicated
- out-patients
- aged 18-63 years
- DSM-III diagnosis of "major depressive episode with melancholia and dysthymic disorder"
- Hamilton Rating Score for Depression score greater than 16
- consent to randomisation; ie: possibility of placebo

EXCLUSION CRITERIA

- severe physical disorder
- medication
- pregnant
- anti-social personality disorder*
- Briquet's syndrome*
- alcohol or drug abuse*
- psychosis*
- bipolar disorder*
- obsessive-compulsive disorder*
- somatoform disorder*
- panic disorder*
- eating disorder*
- phobic disorder*

(* = diagnosed under DSM-III criteria)

Table 3.1 - Criteria for inclusion and exclusion in Vallejo et al (1987) study.

iv) The ethics of denying treatment in the control or placebo group. One traditional method used here is to make the control group those on a waiting list for treatment.

Alternatively, gain informed consent for the participants: making them fully aware that they may be in the placebo or control group when randomised.

Attempts have been made to have the "no treatment" group as similar as the treatment group when comparing therapies. The therapist attempts to direct the patient towards topics assumed to be irrelevant. Others have tried the client and therapist doing recreational activities for the allotted time of therapy (Edmonstone and Freeman 1992).

However these may still influence the client to improve. There are also ethical issues here.

v) Participants dropping out during the clinical trial.

Johnson (1992) notes the reasons and points for drop-outs:

- a) At baseline stage before randomisation;
- b) Discovered later to have another disorder not being studied;
- c) Randomised to one group but given wrong treatment;
- d) Side effects of treatment leads to dose reduced or stopped;
- e) Leaves during trial or defaults on treatment.

To some degree, the problem of drop-out is hard to stop. The simplest answer is to start with a large number of participants.

ONE GROUP POST-TEST DESIGN

This involves one group of participants assessed only after receiving the treatment or therapy (table 3.2; figure 3.1; example 3A). It is similar to the natural experiment.

ADVANTAGE

- opportunist design

DISADVANTAGE

- no baseline and way of measuring improvement

Table 3.2 - Advantage and disadvantage of one group post-test design.

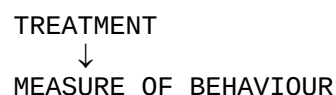


Figure 3.1 - One group post-test design.

EXAMPLE 3A: ONE GROUP POST-TEST DESIGN

Pennebaker, J (1990) *Opening Up, Morrow*: New York

Pennebaker has encouraged survivors of traumatic events to talk about those events, which they usually keep hidden. In the short term, it is unpleasant, but, in the longer term, there are health benefits.

For example, work with sixty Holocaust survivors from World War II 40 years after the events, and students who had hidden childhood trauma. The latter group showed a drop of 50% in physical illnesses (quoted in Rosenhan and Seligman 1995).

This book is more anecdotal than many other studies. Some of the cases quoted there are nearer "pre-experiments" (chapter 2). Another case quoted is a study of a group of 63 men made redundant at a particular company. Those men who expressed their feelings through writing were more likely to have found another job six months later, compared to those who did not express their emotions. However, there were limited controls applied to this research.

ONE GROUP PRE-TEST/POST-TEST DESIGN (PRE-POST DESIGN)

One group of participants are receiving treatment or therapy, but they are assessed before and after the treatment (table 3.3; figure 3.2; example 3B). This is a quasi-experimental design.

ADVANTAGE

- shows improvement for those on treatment

DISADVANTAGE

- no control group

Table 3.3 - Advantage and disadvantage of one group pre-test/post-test design.

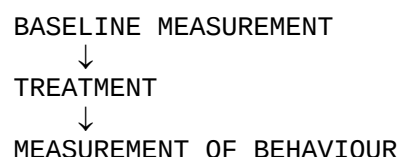


Figure 3.2 - One group pre-test/post-test design.

EXAMPLE 3B: ONE GROUP PRE-TEST/POST-TEST DESIGN

Nuttin, B et al (1999) Electrical stimulation in anterior limbs of internal capsule in patients with obsessive-compulsive disorder, Lancet, 30/10, p1526

Four treatment-resistant obsessive-compulsive disorder patients had electrodes planted in the anterior limbs of the internal capsules in the brain (one on each side). Improvement was shown in three of the patients when stimulation of the acute capsular.

Twelve test sessions were performed where the patients could not tell if the stimulation was on or not. However, an initial reaction was a brief headache for a few seconds, which allowed the patients to know if the stimulation was on. The main measure of improvement used was the Profile of Mood States (POMS).

PRE-TEST/POST-TEST CONTROL GROUP (NO TREATMENT CONTROL)

Here participants are randomly allocated to treatment or no treatment groups. Measurement is made before and after the treatment or therapy (table 3.4; figure 3.3; example 3C). This is similar to an independent design experiment.

ADVANTAGES

- allows comparison between treatment and no treatment
- controls for spontaneous remission in no treatment group

DISADVANTAGE

- participants can guess which group and thus effects of expectation of improvement in treatment group

Table 3.4 - Advantages and disadvantage of pre-test/post-test control group (no treatment control).

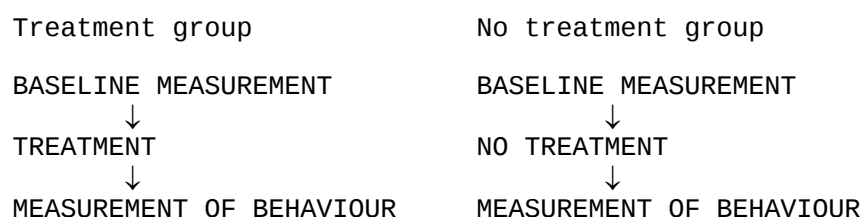


Figure 3.3 - Pre-test/post-test control group (no treatment control).

EXAMPLE 3C: PRE-TEST/POST-TEST CONTROL GROUP (NO TREATMENT CONTROL)

Merckelbach, H et al (1994) Effects of "Eye Movement Desensitization" on emotional processing in normal subjects, Behavioural and Cognitive Psychotherapy, 22, 4, 331-336

Forty participants without Post-traumatic Stress Disorder were used. They were shown pictures of aversive situations. Half were then given "Eye Movement Desensitization and Reprocessing", and the other half no treatment.

The main measurement taken was heart rate (beats per minute) when thinking of aversive situations before pictures shown and after treatment or not. No significant differences were found between both conditions.

PRE-TEST/POST-TEST CONTROL GROUP (PLACEBO CONTROL)

As the method above, but the "no treatment" group receives a placebo of the treatment or therapy (table 3.5; figure 3.4; example 3D). This is also similar to an

independent design experiment.

ADVANTAGES

- allows comparison between treatment and placebo

DISADVANTAGE

- participants can guess if placebo or treatment group (eg: by presence or absence of side effects with drug treatments)

Table 3.5 - Advantage and disadvantage of pre-test/post-test control group (placebo control).

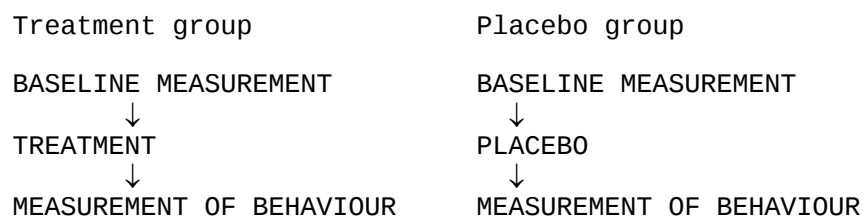


Figure 3.4 - Pre-test/post test control group (placebo control)

EXAMPLE 3D: PRE-TEST/POST-TEST CONTROL GROUP (PLACEBO CONTROL)

White, J; Keenan, M & Brooks, N (1992) Stress control, Behavioural and Cognitive Psychotherapy, 20, 2, 97-114

109 sufferers of Generalised Anxiety Disorder (GAD) randomly allocated to cognitive, behavioural, cognitive-behavioural, or "subconscious retraining" (placebo) versions of "stress control" group therapy. Each condition involved 6 x 2 hour sessions.

Measurement of global anxiety was taken pre, post and six months after treatment. All conditions showed varying degrees of significant improvement by post-treatment measurement (including placebo), and these improvements were at least maintained six months later.

POST-TEST CONTROL GROUP

This type of clinical trial uses two groups involving treatment or no treatment/placebo, but measurement is only made after the treatment or therapy is completed (table 3.6; figure 3.5; example 3E). This is a quasi-experimental design.

ADVANTAGE

- comparison of results after treatment

DISADVANTAGE

- no baseline measurement

Table 3.6 - Advantage and disadvantage of post-test only control group design.

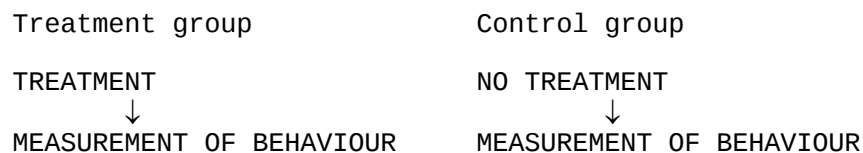


Figure 3.5 - Post-test only control group design.

EXAMPLE 3E: POST-TEST ONLY CONTROL GROUP DESIGN

Warner, J; Metcalfe, C & King, A (2001) Evaluating the use of benzodiazepines following recent bereavement, British Journal of Psychiatry, 178, 36-41

A London study, this involved 30 individuals whose partners had died recently in hospital. Participants were randomly given 20 tablets of diazepam (tranquillizer) or lactose placebo for six weeks.

There was no evidence of any benefits of reducing the distress or increasing coping with the drugs after six months of bereavement. The primary outcome measure was the Bereavement Phenomenology Questionnaire (BPQ) which contains 22 items.

CROSSOVER DESIGN

In this type of clinical trial, participants are randomly allocated to treatment or not treatment/placebo group for the first part of trial, then the groups changed over for the second part (table 3.7; figure 3.6). This type can be called a randomised controlled trial (RCT). It is similar to a repeated measures experiment.

Example 3F is a traditional crossover design, while example 3G is a more complex variation.

Where this design is used for drug trials, there has to be a "washout" period for the drug to leave the body. For example, anti-psychotic drugs can take up to 7 days (Lieberman et al 1999). This is important to avoid confounding the conditions of the drug trial.

ADVANTAGE	DISADVANTAGE
- controls for spontaneous remission and expectations of improvement	- ethics of giving and removing treatment

Table 3.7 - Crossover design.

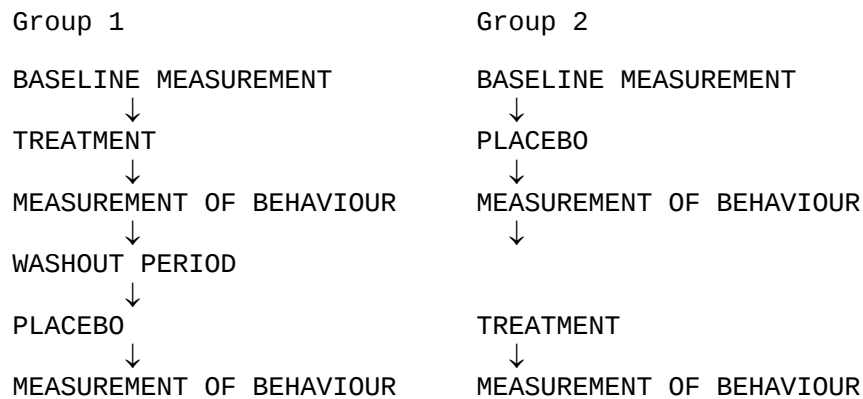


Figure 3.6 - Crossover design.

EXAMPLE 3F: CROSSOVER DESIGN

Agarwal, V et al (2001) Double-blind, placebo-controlled trial of clonidine in hyperactive children with mental retardation, *Mental Retardation*, 39, 4, 259-67

This study is based on ten Indian children, diagnosed with hyperkinetic disorder and low intelligence, to test the effectiveness of clonidine³ in reducing problem behaviour. Five of the children received the drug daily for six weeks then a placebo (sugar-mixed suspension of calcium carbonate) for six weeks, while the other five children had the placebo first, then the drug.

The children when taking the drug showed an improvement in hyperactivity, impulsivity and inattention on both parents' ratings (Parent Symptom Questionnaire) and researchers' ratings (Hillside Behaviour Rating Scale).

EXAMPLE 3G: VARIATION ON CROSSOVER DESIGN

Hochstrasser, B et al (2001) Prophylactic effect of citalopram in unipolar, recurrent depression, *British Journal of Psychiatry*, 178, 304-10

Based on 427 adults with recurrent unipolar major depression, this study was divided into three periods. Period I involved 6-9 weeks of open treatment with citalopram⁴ Period II was a further 16 weeks with the drug if the patients' depression responded to the drug; and Period III was 48-77 weeks on either a placebo or the drug randomly blind for 269 patients left in the study. The time to recurrence of a new depressive episode was significantly longer in the drug group.

³ Clonidine is originally anti-hypertensive drug.

⁴ Citalopram is a selective serotonin reuptake inhibitor (SSRI) anti-depressant.

MULTICENTRE TRIALS (COMPARATIVE OUTCOME STUDY)

Here there are several groups of treatment and no treatment/placebo at different centres (table 3.8; figure 3.7). For example, different hospitals or GPs caseloads (example 3H) and different countries (example 3I). This is an experimental design, and can be classed as a randomised controlled trial (RCT).

ADVANTAGES

- control for participant characteristics at one particular centre
- controls for spontaneous remission

DISADVANTAGE

- problem of standardising procedures across many centres

Table 3.8 - Multicentre trials.

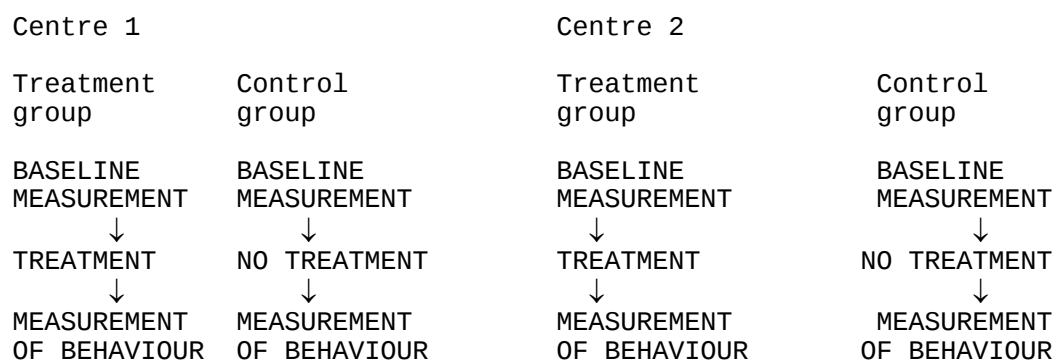


Figure 3.7 - Multicentre trial.

EXAMPLE 3H: MULTICENTRE TRIAL WITH DIFFERENT GPs CASELOADS

Malt, U.F et al (1999) The Norwegian naturalistic treatment study of depression in general practice (NORDEP) - I: randomised double blind study, British Medical Journal, 1/5, 1180-1184

A study based on 372 participants in Norway with depression, chosen from the caseload of 61 GPs. They were randomly divided into three groups by the researchers, so that the GPs or the participants did not know if they were the treatment groups or the placebo group.

The aim was to test the efficacy of two different SSRI antidepressants compared to emotional support and counselling with a placebo. Baseline and measures at 8 and 24 weeks with self-reported Montgomery Asberg depression rating scale, and clinical improvement and impression scales used by GPs. Remission in the patients was greater for the treatment groups than the placebo group.

EXAMPLE 3I: MULTICENTRE TRIAL IN DIFFERENT COUNTRIES

Dowrick, C et al (2000) Problem-solving treatment and group psychoeducation for depression: multicentre randomised controlled trial, *British Medical Journal*, 9/12, 1450-1454

452 participants with depressive or adjustment disorders from nine urban and rural communities in Finland, Republic of Ireland, Norway, Spain, and United Kingdom.

In each centre, participants were randomly allocated to three groups receiving either six individual sessions of problem-solving treatment, eight group sessions of a course to prevent depression, or the control (no intervention).

The main assessment used before and after treatment was the Beck Depression Inventory (BDI). The problem-solving treatment group showed great improvements at six months, but not at twelve months after treatment.

4. OBSERVATION BASED TECHNIQUES

*** DIRECT OBSERVATION**

- Non-participant observation
 - Structured observation
 - Controlled observation
 - Unstructured observation
- Participant Observation
 - Ethnography
 - Action research
- Other
 - Psychoanalytic session
 - Process research
 - Self monitoring
 - Introspection
 - Other

*** INDIRECT OBSERVATION**

- Content analysis
- Discourse analysis
- Conversational analysis
- Secondary sources
- Other

These methods attempt to study individuals without interfering with their behaviour if possible. The focus is upon what can be learnt from individuals in their own habitat acting "normally". Marshall and Rossman (1989) define the method as "a systematic description of events, behaviours and artefacts in the social setting under study".

There are a number of distinctions with this method: directly observing the behaviour or indirectly. Within direct observations: non-participant, where the observation takes place from outside the group, and participant, where the observer is part of the observed group. Observation can be naturalistic or controlled (observation of participants in a lab environment).

Webb et al (1966) prefer the distinction of simple versus contrived observation. The former involves unobtrusive observation with no interference, while the latter has the researcher altering the situation in order to observe the reaction.

Both qualitative and quantitative data can be collected by these methods.

Herbert (1990) distinguishes five types of observation:

i) Unstructured - record as much as possible using no pre-determined format.

ii) Semi-structured - partly using pre-determined

format.

iii) Structured - fully making use of pre-determined format.

These first three variations are all non-participant.

iv) Active participant - observer joins in activities of group, and their identity as observer is unknown to the group.

v) Passive participant - participation in the activities and identity as observer known to group.

Often the observation methods are mistakenly assumed to be easy. However there are a number of issues involved in the construction of an observation project, particularly structured or systematic observations.

CODING OF BEHAVIOUR

There are a number of ways to record the data observed: frequency or the duration and intensity of the behaviour. The frequency can be recorded by behaviour coding: counting the number of a particular behaviour (figure 4.1). While behaviour rating can be used for the duration or intensity of a behaviour (figure 4.2). Behaviour rating involved scoring each behaviour on a scale.

TICK CHART FOR BEHAVIOUR OBSERVED
Record every time behaviour seen:
1. knees trembling
2. face flushed
3. swallows
4. perspires on face
5. perspires on hands
6. perspires, other areas

Figure 4.1 - Example of behaviour coding system for rating anxiety during public speaking.

SCORE FOR EACH BEHAVIOUR (using 5 point scale)

1	2	3	4	5
no	just	slightly	quite	very
sign	noticeable	noticeable	noticeable	noticeable
1. shuffles feet	2. hand tremors	3. breathes heavily		
4. voice quivers				

Figure 4.2 - Example of behaviour rating system for rating anxiety during public speaking.

SAMPLING

A structured or systematic observation must sample the behaviour being observed. Other observation methods may also sample, but it is less important. This can be time, event, or point sampling.

i) Time sampling - the observer does not watch for long periods but sample the time; for example, five minutes in every hour. While partial interval time sampling notes the behaviour if it appears for some of the time, and with whole interval time sampling, the behaviour must be present throughout the whole period observed. Momentary time sampling looks to record the behaviour present at the beginning and the end of the time period.

ii) Event sampling - this records every time the behaviour appears. Whole interval event sampling (Oldfield 2001) records the occurrence or not of the behaviour every "x" seconds (whatever the time period being used).

iii) Point sampling - this records the behaviour shown by each individual in turn. It is useful for small groups.

RELIABILITY OF OBSERVATIONS

When observing a large amount of data, it is possible to miss a certain amount or selectively concentrate on the more "interested" aspects. This is observer bias, and challenges the reliability of the observation. This is an example of "chance response tendencies" (Dunnette 1996). The behaviour observed is not representative of the behaviour generally. This can also occur in structured and systematic observations with poorly defined behaviour categories.

It can be overcome by the use of multiple observers (to establish inter-observer reliability), practising with the behaviour categories beforehand (pilot study), and video recording the behaviour to be observed.

Dunnette (1996) adds three other sources of error for reliability: inadequate samples (due to poor sampling), changes in the participants' behaviour (reactivity because they know they are being watched), and changes in the environment due to the observation. The use of unobtrusive observation can reduce the last two problems.

RECORD-KEEPING

When to record the information is more of a problem than it seems. The simple answer is while observing (running or specimen record-keeping), but this is not possible in participant observations or covert observations. Specimen record-keeping is more detailed than running record-keeping. This mean recording the data later (anecdotal record-keeping). Table 4.1 compares the different means of record-keeping.

ANECDOTAL RECORD-KEEPING	RUNNING RECORD-KEEPING	SPECIMEN RECORD-KEEPING
ADVANTAGE		
not rushed	observe the behaviour as it happens	
DISADVANTAGE		
memory problems	difficult to observe and record at same time	

Table 4.1 - Advantage and disadvantage of three methods of record-keeping in observations.

NON-PARTICIPANT OBSERVATIONS

The observer is clearly outside the group while observing with this type of method. In other words, the observer does not interfere or become involved in the group or situation being observed.

The main types of non-participant observation are naturalistic structured or systematic observations. There are also semi-structured and unstructured observations. Controlled observations are halfway between non-participant observations, participant observations, and experiments.

Table 4.2 lists the main advantages and disadvantages of non-participant observations.

ADVANTAGES	DISADVANTAGES
- natural environment observed	- lack of control or causality
- where experiment not appropriate	- difficulties of measurement
- means of identifying new problems/hypotheses	- relatively small sample
- where participants would not or cannot co-op with questionnaire research	- some aspects of behaviour not observable
- where fuller picture of behaviour needed than in experiment	- important behaviour may be missed
- describe chronology of behaviour	- observer bias
- subtlety of interaction can be observed	- difficult to replicate
	- reactivity of participants if know being watched

Table 4.2 - Advantages and disadvantages of non-participant observations.

Structured or systematic observation

This makes use of detailed coding frames prepared before the observation. It usually concentrates on specific behaviours and collects quantitative data. Many of the issues discussed earlier (eg: reliability) are important here.

Table 4.3 lists the main advantages and disadvantages of this method, while examples 4A, 4B and 4C show different ways of using it. Table 4.4 compares structured and unstructured observations.

ADVANTAGES

- comparison on data possible
- ease of coding observations

DISADVANTAGES

- limited use because such narrow focus
- ignores events other than the observed behaviour
- depends on clarity of definition of behaviour categories

Table 4.3 - Advantages and disadvantages of structured observations.

EXAMPLE 4A: STRUCTURED OBSERVATION

Spence, S.H & Marziller, J.S (1979) Social skills training with adolescent male offenders - I: short term effects, Behaviour Research and Therapy, 17, 7-16

Five adolescent male young offenders, with few friends, classed as having behaviour problems were videotaped while interacting with adults.

A rating system for 32 social skills was used, and each skill rated on five point scale. The researchers also used self-reported questionnaires for the offenders and a staff questionnaire.

It was found that they avoided eye contact, made inappropriate head movements, had excessive hand fiddling, and gave little verbal feedback during the interactions. These behaviours are all social skills which encourage interaction.

The participants were given training sessions, which included role playing, and this increased eye contact and reduced hand fiddling during interactions.

EXAMPLE 4B: STRUCTURED NATURALISTIC OBSERVATION

Paul, G.L (1966) Insight vs Desensitisation in Psychotherapy, Stanford University Press: Stanford, CA

The construction and use of a rating schedule for observing signs of anxiety during speeches in public. Using thirty second time periods, twenty behaviours were observed.

Event sampling would involve watching for one behaviour in a thirty second period, which is easier than trying to look for all twenty behaviours at once. The alternative is to use more than one observer.

The twenty behavioural signs of anxiety during speaking includes "paces", "shuffles feet", "perspires (face, hands, armpits)", and "speech blocks or stammers".

EXAMPLE 4C: SYSTEMATIC OBSERVATION

Kretschmer, E (1963) Physique and Character (2nd ed), Trubner: New York

Kretschmer devised a sophisticated way of classifying the major parts of the body, which he did as the individual stood naked in front of him. The results were analysed and divided into three fundamental types of physique.

Based on his observation of body types and personality, Kretschmer believed there was a clear relationship. He observed three types of body build: pyknic (stocky), athletic (muscular), and asthenic (lean). The pyknic boy type is linked to the cyclothymic personality type (mood changes), and the asthenic build to the schizotypal personality type, Kretschmer believed.

The connection between body type and mental disorder was established by Kretschmer studying 260 psychotic individuals (85 with manic-depression ⁵ and 175 with schizophrenia). Where a clear

⁵ Manic-depression is now called bipolar disorder (DSM-IV).

relationship was established, 81 of the schizophrenics were asthenic, and 58 of the manic-depressives were pyknic.

Subsequent research with objective measures have not confirmed these relationships (Gelder et al 1996).

STRUCTURED OBSERVATION

- concentrates on specific behaviour
- checklist devised before observation begins
- reliability possible to establish

UNSTRUCTURED OBSERVATION

- all behaviour in situation observed
- no checklist used, but any and all data recorded
- difficult to establish reliability

Table 4.4 - Comparison of structured and unstructured observations.

Semi-structured observations make use of prepared checklists, but there is greater flexibility to record behaviour outside the categories used (example 4D).

EXAMPLE 4D: SEMI-STRUCTURED OBSERVATION

Lochman, J.E et al (2001) Disruptive behaviour disorder: assessment and intervention. In Vance, H.B & Pumariega, A.J (eds) Clinical Assessment of Child and Adolescent Behaviour John Wiley: New York

Details of the case of Billy Sherman, 11 years 5 months old, who shows tantrum behaviour, property destruction, and aggressive behaviour (both physical and verbal) among other problems.

A full assessment of his behaviour takes place involving a number of techniques: semi-structured observations, and rating scales, like the Social Skills Rating System (Gresham and Elliott 1990), and clinical interviews. Rating scales were completed by Billy's mother, teacher, and probation officer, as well as himself. He also completed the Childhood Depression Inventory (CDI) (Beck, Steer and Garbin 1988), and the revised Wechsler Intelligence Test (WISC-III) (Wechsler 1991).

The behaviours noted were "consistent with a diagnosis of conduct disorders".

Controlled observation

This is halfway between the experiment and naturalistic observation methods. it is an observation in a lab situation. There may be influences on the

environment by the researcher, but it is not manipulation of an independent variable like in an experiment.

Table 4.5 compares the controlled and naturalistic observation methods in terms of advantages and disadvantages. Example 4E is the use of a controlled observation in family therapy.

CONTROLLED OBSERVATION	NATURALISTIC OBSERVATION
ADVANTAGES	
- stricter control than naturalistic observation	- high ecological validity
- more flexible than experiment	- participants not aware observed
DISADVANTAGES	
- low ecological validity	- no possible to establish cause and effect
- participant reactivity because they know they being observed	- replication difficult

Table 4.5 - Comparison of controlled and naturalistic observation methods.

EXAMPLE 4E: CONTROLLED OBSERVATION

Minuchin, S (1974) Families and Family Therapy, Harvard: Harvard University Press

This study is the observation used by a family therapist as part of the therapeutic process with the Collins family. The younger daughter, Violet, 12 years old, had behaviour problems, and this was the basis for the recommendation for therapy.

Minuchin observed the family of four, discussing conflictual issues, in order to discover the family dynamics. The older daughter, 17 years old, was used by both partners to gain support for their side of the argument. While aspects of the conflict were reduced by the detouring through the younger daughter. She was never directly involved in the arguments.

In family therapy, the detouring of the family conflicts is seen as the cause of Violet's behaviour problems because of the inter-dependence between family members. This approach is also known as systems theory or family systems theory.

Unstructured observation

Used often at the beginning of research projects, the aim is to record as much as possible. This not only includes the specified behaviour, but the context and surroundings of the behaviour.

Data collected with this method tends to be "narrative data" (ie: qualitative) rather than statistics

(quantitative).

Table 4.6 lists the advantages and disadvantages of this method. Banister et al (1994) give a number of headings to use with an unstructured observation. Example 4F is from a therapy situation.

ADVANTAGES

- whole context of behaviour observed
- ecological validity

DISADVANTAGES

- observer bias (with no clear focus)
- interpretations by observer

Table 4.6 - Main advantages and disadvantages of unstructured observation.

HEADING	EXAMPLE
- context of observation	- physical setting
- participants being observed	- appearance
- observer	- gender of observer
- actions of participants	- non-verbal behaviour
- interpret situation	- meanings of actions
- alternative interpretation	- other meanings
- reflexive analysis	- explore feelings as observer

Table 4.7 - Headings for carrying out an unstructured observation (based on Banister et al 1994).

EXAMPLE 4F: UNSTRUCTURED OBSERVATION

Schefflen, A (1964) The significance of posture in communication systems, *Psychiatry*, 27, 316-31

Schefflen believes that non-verbal behaviour is a form of language. This is a study of body movements employed by therapists and patients during consultations.

The "points" (small movements like head turns), "positions" (shifts in body posture), and "presentations" (eg walking around) can be seen to mirror the conversation during the therapy session.

For example, the patient avoiding the gaze of the therapist when painful topics are being discussed. In psychoanalysis, non-verbal behaviours may also be used in the interpretation process by the analyst.

PARTICIPANT OBSERVATION

This method involves the researcher being part of the group they are observing, and observing from within the group. Often their identity as a researcher is hidden, and they appear as an ordinary member of the group.

This is sometimes known as ethnography, where the researcher lives with the group being observed, as in anthropology. Technically, though, ethnography is a multi-method form of research (Banister et al 1994).

Table 4.8 lists the advantages and disadvantages of participant observation.

Patton (1980) distinguishes four types of participant observation:

i) Full participant (sometimes called active participant) - the researcher is known as a group member only (example 4).

ii) Participant as observer - the researcher's identity is known to some members of the group, like the leaders, only.

iii) Observer as participant (sometimes called passive participation) - the researcher's identity is known to the group as they join in the group's activities (example 4H).

iv) Full observer - this is non-participant observation.

EXAMPLE 4G: FULL PARTICIPANT OBSERVATION

Rosenhan, D.L.(1973) On being sane in insane places, Science, 179, 250-258

Rosenhan reports the details of eight "sane people" ("pseudo-patients") (including himself) gaining admission to twelve different psychiatric hospitals in USA. Within the institutions as patients, they observed the interaction between staff and patients, without the staff knowing their real purpose.

The "pseudo-patients" lied about their name, occupation, and hearing voices which said "empty", "hollow", and "thud". Otherwise all other answers were true. All eight individuals were admitted by psychiatrists with a diagnosis of "schizophrenia" on eleven occasions and "manic-depression" on the other.

The "pseudo-patients" remained in hospital between 7 to 52 days. Even when the nature of the research was explained to the hospitals, the label of "schizophrenia in remission" was used; ie: the psychiatrists never admitted they were wrong in their diagnosis. Interestingly 35 of 118 patients noticed that the "pseudo-patients" were "not crazy".

Often the second part of this research is ignored, which was

to collect details of the interactions between the staff and patients. For example, the staff had little contact with the patients, other than to give medication, lead therapy sessions, or reprimand a patient, "as if the disorder which afflicts their charges is somehow catching".

The researchers also recorded verbal and occasional serious physical abuse to patients by the ward attendants.

ADVANTAGES

- inside information if accepted as member of group
- does not disrupt activities of group
- flexible to follow leads
- build relationships which allows deeper insights
- high ecological validity
- meanings of behaviour available

DISADVANTAGES

- may influence behaviour of group members
- often uses deception
- researcher may lose objectivity and become too involved in group ("going native")
- group uncomfortable if know being observed
- note-taking not always possible and so depends on memory of researcher
- not replicable
- observation and inference may become confused

Table 4.8 - Advantages and disadvantages of participant observation.

EXAMPLE 4H: "OBSERVER AS PARTICIPANT" TYPE OF PARTICIPANT OBSERVATION

Hinshelwood, R.D (1987) What Happens in Groups, Free Association Books: London

This is the application of psychodynamic principles to understanding group behaviour. It is based on the observations of staff working in a therapeutic community with clients with mental health difficulties.

One particular example focuses on a potentially difficult staff meeting. The staff are drinking coffee before the meeting and there is no milk. One member of staff has to get the milk from the kitchen staff. On returning the staff member starts to complain about the kitchen staff, and this then became the focus of the whole group.

Hinshelwood sees this as the defence mechanism of projection by the group. The staff group dealt with their problems by focusing on what was wrong in another group; ie: the kitchen staff.

Ethnography

Many methods are of ethnography, including participant and non-participant observation, and interviews. But what is distinct about ethnography is its purpose - cultural description (Uzzell 1995) (example 4I). It seeks to build "a systematic understanding of all human cultures from the perspective of those who have learned" (Spradley 1979).

More commonly used in anthropology, and sociology. it goes beyond description "to encompass elicitation and documentation of culture knowledge" (Banister et al 1994).

EXAMPLE 4I: ETHNOGRAPHY

Jodelet, D(1991) Madness and Social Representations, Harvester Wheatsheaf: Hemel Hempstead

This book is based upon the work in a French village called Ainey-Le-Chateau. There is a history of individuals with mental illness living as lodgers with families in the village.

Jodelet used a number of methods technically, but, in the main, she lived in the village for a while. What she discovered was the specific attitudes (or social representations) of villagers to the lodgers.

For example, the concepts of cleanliness and contamination were very important. Jodelet was able to show a complex set of representations in the village about insanity and its origins.

The villagers divided the lodgers in to five types: "the innocent", "the nutter", "the epileptic", "the crackpot", and "the headcase". The villagers felt that the last two categories were dangerous, and caused them anxiety.

Action research

Developed in the field of applied psychology, this method works with participants and is based on "the idea of studying through changing them and seeing the effect" (Banister et al 1994). But it is not controlled like the experiment because it is usually a real life setting and the researcher is fully involved.

It is typically aimed at solving problems, and may make use of a selection of methods. For example, the researcher is involved in the setting up of a self-help group for patients with mental illness, while recording details of the process (as in example 4J). The researcher is thus an "agent of social change".

Zuber-Skerritt (1992) notes the characteristics of action research:

- i) The research is practical and applied.

ii) The participation and collaboration by those being studied. The researcher's opinion is one of many.

iii) Thus the participants are liberated from the traditional "participant role".

EXAMPLE 4J: ACTION RESEARCH

Holland, S (1996) Developing the bridge to women's social action. In Heller, T et al (eds) Mental Health Matters: A Reader, Macmillan: Basingstoke

This reading is about a project with women in west London, specifically aimed at giving them an alternative to psychotropic drugs.

For example, women encouraging women to talk about their past and problems ("her-story"). Part of the "Women's Action for Mental Health" (WAMH), this project led to a "centre for women's emotional wellbeing" called "The Bridge".

OTHER TYPES OF DIRECT OBSERVATION

Here are a selection of other methods and techniques developed from observing behaviour.

Psychoanalytic session

In traditional Freudian analysis, the analyst spends most of the time listening to the analysand, and in time makes interpretations of the unconscious processes involved. Not only are analysts listening, but they are "using themselves - their emotional and bodily reactions (such as tenseness, sleepiness, etc) to what the patient brings into the session - as tools with which to understand the patients' inner experience" (Thomas 1996a p288).

The analyst is making use of counter-transference: their unconscious reactions to the unconscious transference of the client. "Counter-transference reactions produce sense data: sensations of sleepiness, sadness, irritation, feeling threatened or humiliated, sudden impulses to comfort, or retaliate with attacking remarks. And there are patients whose session correlate with somatisation in the analyst - headaches or stomach pains" (Thomas 1996b p196).

Example 4K shows counter-transference being used in analysis.

EXAMPLE 4K: PSYCHOANALYSIS

Bollas, C (1987) The Shadow of the Object, Free Association

Books: London

Bollas records a case of Helen, who, during analysis, would pause in mid-sentence for a few minutes. The analyst's attention starts to wander during the pauses: "it seemed to me that she was creating some kind of absence that I was meant to experience".

Further on in analysis, it was discovered that Helen's mother had been distracted often in Helen's early years. The analyst was experiencing a transference of Helen's feelings of absence as a young child.

Process research

This is a developing area for the assessment of therapies. The focus is upon what is happening during therapy (ie: the changes in patient behaviour) rather than the outcome of success or not. It may make use of different techniques, like content analysis. This technique may be either qualitative (as in example 4L) or quantitative.

Barkham et al (1996) report the use of both types of process research as part of the Sheffield Psychotherapy Projects. While Elliot et al (1985) have investigated change in therapy using quantitative methods: developing a "discovery-orientated approach".

EXAMPLE 4L: QUALITATIVE PROCESS RESEARCH

Barker, C (1985) Interpersonal process recall in clinical training and research. In Watts, F.N (ed) New Developments in Clinical Psychology, Wiley: Chichester

This reference gives details of a qualitative method used as part of process research. In particular, a technique called "interpersonal process recall" (IPR).

A specific interaction in therapy is video-taped, and played back to the therapist and client at a later date. The aim is to see how each participant felt during that specific interaction.

Often the therapist and client will have very different views about the same interaction.

Self-monitoring

This is the observation of the self. In cognitive-behavioural therapy, for example, the client is recommended to monitor a particular behaviour for a set period (as in example 4M). This is the basis of the develop of a programme to help change the behaviour - make the individual aware first. Self-help strategies may make use of self-monitoring.

Table 4.9 shows the main advantages and disadvantages of self-monitoring of behaviour.

ADVANTAGES

- individual can become aware of own behaviour
- helps individuals to feel empowered

DISADVANTAGES

- some mental illnesses lack insight
- may be negative to realise how much behaviour occurs
- not being honest to self or others about frequency of behaviour

Table 4.9 - Main advantages and disadvantages of self-monitoring of behaviour.

EXAMPLE 4M: SELF-MONITORING OF BEHAVIOUR

Sullivan, J & Rogers, P (1997) Cognitive behavioural nursing therapy in paranoid psychosis, Nursing Times, 8/1, 28-30

This is the case of "Michael Carroll", a 43 year old man, with a series of paranoid beliefs. As part of a cognitive-behavioural programme to deal with four beliefs in particular, the client was encouraged to think about the evidence for such beliefs.

For example, he strongly believed: "my food has been deliberately poisoned on two separate occasions". The client had vomited blood at the time of these delusions. By self reflection and guidance from the therapist, he was able to see the cause of the vomiting of blood as linked to his stomach ulcer not the poisoning of his food. The beliefs were greatly reduced by twelve sessions of cognitive-behavioural therapy.

Introspection

Introspection was one of the earliest methods used in psychology. It requires the individual to look into themselves and to report what they find. It is a self-analysis of thoughts and feelings.

Example 4N is the case of an individual who is able to analyse his thinking while he was in psychotic states.

EXAMPLE 4N: INTROSPECTION

Chadwick, P (1992) Borderline, Routledge: London

This book is autobiographical as well as a study of psychotic states. Chadwick gives details of his thoughts and experiences when he was in psychotic states in the past.

One chapter is entitled "The Route to Hell and Back" and gives an insight into the mind of an individual in a psychotic state. For example, Chadwick kept hearing clicks, which he interpreted as guiding his behaviour: two clicks for yes, one for no etc. He was also very concerned that he was being watched and followed by individuals from an organisation. At his worst,

Chadwick threw himself in front of a bus.

Chadwick's works also try to show positive aspects to psychotic thinking, like the ability to notice connections between things (Chadwick 1997). While Chadwick (2001) attempts an analysis of his psychotic thinking from one day in 1979.

Miscellaneous: Measurement of body image

Measurement of body image is an important part of working with individuals with eating disorders. There is a tendency for them to have a distorted body image perception.

There are four similar techniques used to measure body image:

i) Body image assessment (BIA) - this involves nine cards with silhouettes of body shapes, and the participants choose the one nearest to their current body shape, and then the one nearest their ideal. The difference is taken as a measure of body dissatisfaction (Williamson et al 1998).

Sufferers of eating disorders tend to overestimate their actual body shape, and desire a much smaller ideal (Cooper 1993).

ii) Moving caliper technique - individuals are asked to imagine their body silhouette on a screen and mark the width of the face, shoulders, waist and hips using the callipers.

This is then compared to actual body measurement (Cox 2000).

iii) Image-marking technique - using a large sheet of paper, individuals are asked to mark body widths on the sheet as if it was a mirror. This is compared to actual measures as with (ii).

iv) Distorting image technique - the adjustment of a screen until it appears the correct body width and size for the individual.

INDIRECT OBSERVATION

Some events cannot be observed directly because they have already occurred, or are too rare, or cannot take place in a way that can be observed (eg: suicide). Here methods are used that observe the behaviour indirectly in some way.

Content analysis

Content analysis is a form of indirect observation that focuses on analysing media messages and communications. It has been used to study the themes and images in television (example 40) and radio programmes, literature and magazines (example 4P). It can be used to collect quantitative data, but more usually now for qualitative data. Table 4.10 lists the advantages and disadvantages of its use.

ADVANTAGES	DISADVANTAGES
- gives broader social context to behaviour - shows how meanings are communicated	- sampling problems - reliability and validity of qualitative content analysis

Table 4.10 - Advantages and disadvantages of content analysis.

EXAMPLE 40: CONTENT ANALYSIS OF TELEVISION PROGRAMMES

Wilson, C et al (2000) How mental illness is portrayed in children's television, *British Journal of Psychiatry*, 176, 440-443

This study from New Zealand is based upon a sample of one week of children's television for under 10s (timed between 6.30-9am and 3-4.30pm) on two free-to-air channels. This is a total of 57 hours 50 minutes of programmes. The aim was to see how mental illness is portrayed in children's programmes.

Of the 128 programmes studied, 59 of them (46.1%) made references to mental illness. The vast majority of the references were negative and stigmatizing; using terms like "crazy" (28 times), "mad" (19), and "losing your mind" (13); as well as "loony" (7), and "wacko" (9).

The researchers argue that: "Young viewers are being socialised into stigmatizing conceptions of mental illness" (p440).

EXAMPLE 4P: CONTENT ANALYSIS OF MAGAZINES

Malkin, A.R et al (1999) Women and weight, *Sex Roles*, 40, 7-8, 647-656

This study was a content analysis of the front covers of 21 women and men's magazines for messages about bodily appearance.

78% of the women's magazines and none of the men's had such messages; the most common being "diet" followed by "exercise". 25% of the women's magazines had conflicting messages: for example, about diet, and recipes for rich food.

Such messages have a role to play in the growth of eating disorders among women (Brewer 2001).

Discourse analysis

Discourse analysis is similar to content analysis as an indirect form of observation, but this concentrates on the written or spoken words used in communication (rather than the images in content analysis).

"Discourse analysis treats the social world as a text, or rather as a system of texts which can be systematically 'read' by a researcher to lay open the psychological processes that lie within them.." (Banister et al 1994 p92). In other words, the researcher is looking for the underlying social assumptions in interactions.

In particular, the ideas seen as "common sense". "Some discourses or constructions are so familiar that they appear as 'common sense'. If these discourses are deconstructed or taken apart it becomes possible to see how certain dominant ideologies have become 'taken for granted', and from this point consideration can be given to alternative discourses.." (Marshall 1992 p203).

Potter and Wetherell (1995) highlight six central themes with the use of discourse analysis:

i) Practices and resources - the aim is to look at "what people do with their talk and writing" (known as discourse practices), and the resources used to achieve this aim (the categories and interpretative repertoires used).

ii) Construction and description - this is the study of "how people assemble (versions of) the world in the course of their interactions".

iii) Content - the focus on what is said.

iv) Rhetoric - within discourses are inbuilt "argumentative organisations"; ie: what is said is in reference to an imaginary counter-argument.

v) Stake and accountability - people are treated as having an interest (stake) in their actions.

vi) Cognition in action - it is more important to study what is actually said than an individual's cognitive attitudes.

Example 4Q shows these processes and discourses at work in eating behaviour. Table 4.11 outlines the main advantages and disadvantages of discourse analysis.

ADVANTAGES

- focus on what is actually said
- highlight underlying social assumptions in communication
- shows how behaviour is socially constructed
- shows meanings of behaviour

DISADVANTAGES

- language given too much emphasis; ie: plays down cognitive processes
- argues against language as means of communication only
- subjective interpretation by researcher
- problems of reliability and validity

Table 4.11 - Advantages and disadvantages of discourse analysis.

EXAMPLE 4Q: DISCOURSE ANALYSIS

Wiggins, S; Potter, J & Wildsmith, A (2001) Eating your words: discursive psychology and reconstruction of eating practices
Journal of Health Psychology Jan, 5-15

Discourse analysis was performed on a naturalistic study of eating practices. The interest was to see how the construction of eating practices (ie: the language used to talk about food) can have a role in eating disorders.

Fifteen hours of conversation at family mealtimes were recorded over a seven day period with three families. The families all had adolescent daughters.

One theme in particular that emerged was the amount that is normal for teenage adolescent females to eat in a day. This was always defined in comparison to others, and the "idea of being held accountable for what one eats is an important aspect of interaction, particular in relation to body image and the 'thin ideal'" (p12).

Conversational analysis

Conversational analysis focuses upon the interaction between individuals. Bryman (2001) defines it as: "Fine-grained analysis of talk as it occurs in interaction in naturally occurring situations" (p355). The analysis is concerned with the underlying structure of talk in interaction, and the achievement of order through interaction. The aim is different to that of discourse analysis.

Example 4R comes from a therapy situation.

EXAMPLE 4R: CONVERSATIONAL ANALYSIS

Labov, W & Fanshel, D (1979) Therapeutic Discourse, Academic Press: New York

Analysis of fifteen minutes of the 25th session of

psychotherapy with a 19 year old anorexic woman. From the analysis of the therapeutic conversation, it was possible to show the significant issues in the client's life.

Secondary sources

The use of historical records (example 4S), archival data (example 4T), and personal documents (examples 4U). The advantages and disadvantages of using such sources are detailed in table 4.12.

Chase (1995) includes three groups of data from historical sources:

i) Memory data sources - eg: autobiography (example 4V).

ii) Representational data sources - including media records, manuscripts and writings, and official data.

iii) Artefactual data sources (indirect sources) - eg: gravestones as representations of death over time.

ADVANTAGES

- unobtrusive
- possible to examine trends over long period of time

DISADVANTAGES

- necessary material sometimes hard to obtain
- reliability and validity of documents
- limited sampling only

Table 4.12 - Advantages and disadvantages of secondary sources.

EXAMPLE 4S: HISTORICAL RECORDS

Jamison, K.R (1995) Manic-depressive illness and creativity, Scientific American, February, 46-51

Kay Redfield Jamison makes use of historical sources to show how many creative individuals suffered from manic-depression (bipolar disorder). But, in particular, she concentrates on the music composer, Robert Schumann.

Jamison is able to show a relationship between his moods and the number of pieces of music composed. For example, in 1833, the year of a suicide attempt, Schumann composed two pieces of music. While in 1840, a year of being "hypomaniac", he produced 24. There was a similar pattern in 1844 (severely depressed) and 1849 (hyomaniac). Other years, the average output was three to five pieces in a year.

EXAMPLE 4T: ARCHIVAL DATA

Seaborne, A & Seaborne, G (2001) Suicide or accident - self-killing in medieval England, *British Journal of Psychiatry*, 178, 42-47

198 cases of self-killing were found in the Eyre records (judicial and administrative inquiry) between 1227-1330. Hanging was most common for men (59 of 135 male self-killings), and this was followed by drowning, and the use of sharp objects.

The same three methods were most popular for women, but many less self-killings (63 in total).

EXAMPLE 4U: PERSONAL DOCUMENTS

Jacobs, J (1967) A phenomenological study of suicide notes, *Social Problems*, 15, 60-72

112 suicide notes from the Los Angeles area were studied after the individuals committed suicide. Jacobs was interested in the "meanings" the individuals experienced before killing themselves.

The main distinct was between those that begged forgiveness and those that did not.

EXAMPLE 4V: AUTOBIOGRAPHY

Wolpert, L (2001) Stigma of depression - a personal view, *British Medical Bulletin*, 57, 221-224

In his book, "Anatomy of Depression", Lewis Wolpert recounts his experience of suffering serious depression. This short summary concentrates on the stigma of depression, and the consequent self-stigmatisation that makes sufferers ashamed and secretive about their depression.

"I am repeatedly congratulated for being so brave, even courageous, in talking so openly about my depression. I, in fact, am a 'performer', and there is no bravery, but these comments show how others view depression and that it is highly stigmatised" (p222).

Ultimately, Wolpert says, the shame and stigma can stop individuals with depression coming forward for treatment.

Other methods of indirect observation

COMPUTER SIMULATION

The construction of computer models to help understand human behaviour. This can be applied to clinical psychology for studying the brain and organic problems, for example.

PHYSICAL TRACES

The study of evidence left behind after an event. For example, an analysis of skid marks after car accidents to see if the driver fell asleep at the wheel, and when is the peak time for this behaviour (Horne 1992).

ROLE PLAY/SIMULATION

Participants take on a role and behave how they imagine that role would behave. It is usually based on particular scenarios. For example, changing negative attitudes towards mental illness by role playing sufferers.

Individuals can be either themselves or others in a situational role (active role playing), or watching others and imagining their feelings (non-active role playing).

Often used as part of social skills training. Table 4.13 gives the main advantages and disadvantage of the method.

ADVANTAGES	DISADVANTAGE
- no ethical problems	- participants may act how they would want to act, not how they would behave
- study situations not possible to study with experiments	

Table 4.13 - Main advantages and disadvantage of role playing and simulation.

Sociometry

This method analyses the interaction within a group. Group members are asked to rate others in the group, and from their responses, a sociometric matrix can be drawn

The Peer Nomination Inventory for Depression (PNID) helps assess the popularity of children among peers, and the link of lack of popularity with depression (Lefkowitz and Tesiny 1980).

Table 4.14 gives the advantage and disadvantages of this method, and figure 4.3 is a hypothetical sociometric matrix.

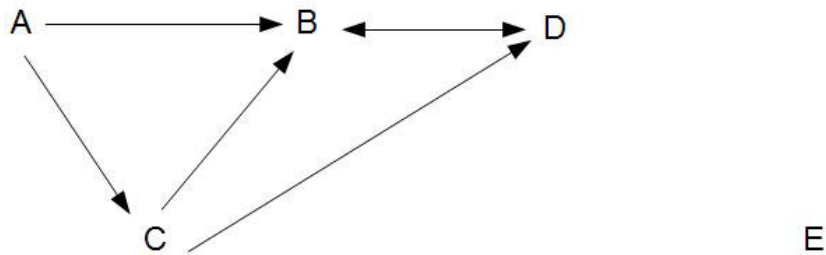
ADVANTAGE

- shows pattern of social relationships

DISADVANTAGES

- limited to small groups only, or else become very difficult to draw sociometric matrix
- choices of friends on paper not necessarily same as real life

Table 4.14 - Main advantage and disadvantages of sociometry.



Key:

- A = neglectee
- B = star
- B/D = mutual pair/reciprocated
- E = isolate

Figure 4.3 - Example of sociometric matrix

5. TECHNIQUES BASED ON ASKING QUESTIONS

- * SURVEYS AND INTERVIEWS
- * DIARY METHOD
- * METHODS TO ELICIT RESPONSES
- * CLINICAL INTERVIEW

The common theme with these methods is the aim of getting the individual to talk about themselves, and their problems. As Schuman and Kalton (1985) point out: "asking questions is a remarkably efficient way to obtain information from and about people".

Individual's replies may be interpreted or scored, but it is the feelings, thoughts and attitudes of the individual that matter. The attempt is to gain an "insider view" of the disorder.

SURVEY OR INTERVIEW

These methods are usually a large scale collection of data either through interview or questionnaire. Table 5.1 gives the advantages and disadvantages of these methods.

The questionnaire may be administered face-to-face (as in example 5A), over the phone (like examples 5B and 5C), or postal self-reporting (example 5D). They may be structured (example 5E), semi-structured (example 5F), or unstructured (example 5G) (directive or non-directive). The interviewer may fill in the questionnaire or it may be self-administered by the participant (example 5H). The data may be collected from individuals or from groups (focus groups can be created; Millward 1995).

Table 5.2 compares the different variations. While Massark (1981) notes six different types of interview (table 5.3).

ADVANTAGES	DISADVANTAGES
- larger sample than other methods	- large sample can be expensive
- easier than observation	- no time to build trust in short interview
- no reactivity problems	- interviewer bias
- allows comparison of answers with structured questions	- accuracy of answers
- gain information hard to observe	- limited by nature of questions
	- sample bias
	- social desirability bias

Table 5.1 - Advantages and disadvantages of surveys and interviews.

EXAMPLE 5A: FACE-TO-FACE INTERVIEW

Nandi, D.H et al (2000) Psychiatric morbidity of a rural Indian community, British Journal of Psychiatry, 176, 351-356

Based on a survey of households in a village 60 kilometres from Calcutta in India. The aim was to gain an estimate of the rate of mental disorders in a rural population compared to a 1972 survey.

The rates per 1000 people were calculated from the households surveyed. "Depression" was the most common mental disorder at a rate of 74 per 1000, and this had increased from 50 in 1972. "Anxiety" and "hysteria" had dropped since 1972. The researchers used their own diagnostic categories.

ADVANTAGES	DISADVANTAGES
UNSTRUCTURED INTERVIEWS	
- idiographic	- difficult to compare
- rich data: qualitative	- reliability problems
	- may miss important aspects
STRUCTURED INTERVIEW	
- easier to compare between individuals	- inflexible
- can be used by several interviewers	- less natural
- replicable	- limited information collected
- easy to carry out and analyse	
GROUP INTERVIEW	
- more people quicker	- not equal answers given by all group members
PHONE INTERVIEW	
- cheaper than face-to-face	- limited to short interviews only
FACE-TO-FACE INTERVIEW	
- best for unstructured interviews	- interviewer-interviewee bias at greatest
POSTAL QUESTIONNAIRE	
- respondents can remain anonymous	- low response rate
SELF-ADMINISTERED QUESTIONNAIRE	
- saves time	- misunderstand questions

Table 5.2 - Comparison of the different types of surveys and interviews.

EXAMPLE 5B: PHONE INTERVIEW WITH RANDOM SAMPLE

Meich, R.A & Shanahan, M.J (2000) Socioeconomic status and depression over life's course, *Journal of Health and Social Behaviour*, 41, 162-176

The researchers approached 2031 USA adults between the ages of 18-90 years old by phone. They were interested in the relationship between level of education and depressive symptoms.

The levels of education were "high school degree" (lowest), "some college" to "college degree or higher". The first group consistently showed the most depressive symptom scores (approximately 11) in all age groups, and the "college degree or higher" group the least (approximately 5).

This relationship may not be a straightforward correlation. Those of lower education may have poorer jobs and lower income, and this may account for the depressive symptoms.

EXAMPLE 5C: PHONE INTERVIEW

Nordenmark, M & Strandh, M (1999) Towards a sociological understanding of mental well-being among the unemployed: the role of economic and psychosocial factors, *Sociology*, 33, 577-598

A structured telephone interview of a random sample of 3500 unemployed people in Sweden. 74% agreed to be interviewed, while the remainder either refused or could not be contacted.

The interview schedule involved forced choice questions on "mental well-being", work, beliefs about future, and job search behaviour. Two years later the sample were re-interviewed.

EXAMPLE 5D: POSTAL QUESTIONNAIRE

Milton, M & Coyle, A (1998) Psychotherapy with lesbian and gay clients, *Psychologist*, February, 73-76

96 responses were received (of 578 sent out) from British Psychology Society members in this survey of therapists about their experiences of working with lesbian and gay male clients.

The questionnaire contained both closed information and four open-ended questions about incidents of bias, and the professional practices with lesbian and gay male clients.

The importance of acceptance and open-mindedness were emphasised. Along with awareness of the implicit values of much therapy being heterosexual: for example, using homosexuality as a cause of the problem; being lesbian as the reason for poor relationships with men. The analysis tended to be thematic (ie: qualitative) rather than statistical.

EXAMPLE 5E: STRUCTURED QUESTIONNAIRE WITH QUOTA SAMPLE

MORI (1997) Attitudes towards schizophrenia: a survey of public opinion, Research study conducted for Fleishman Hillard and Lilly

This general survey into public attitudes in Britain towards schizophrenia used a nationally representative quota of 1804

adults aged 15 years and older, interviewed in 167 different places. The sample was drawn from across the census wards and 75 strata (region, urbanity, and social class).

The survey contained nine standard questions: some were open-ended, some were forced-choice.

Example of open-ended questions:

1. What types of mental illness can you think of?
("schizophrenia" was reported most often).

3. Thinking now about schizophrenia. Which, if any, symptoms of schizophrenia can you think of? ("split personality" was most often reported ⁶).

Example of forced-choice questions:

9. Which if any of the following conditions has a close friend or a member of your family had? (7 choices given; "stress" most chosen).

EXAMPLE 5F: SEMI-STRUCTURED INTERVIEW

Seu, I.B (1998) Change and theoretical frameworks. In Seu, I.B & Heenan, M.C (eds) *Feminism and Psychotherapy*, Sage: London

The use of semi-structured interviews to investigate women's experiences of shame and its link with self esteem. The interviews were divided into two parts: general, more structured questions about their lives and interests; then unstructured reporting of their experiences of shame.

Open questions like "Is there anything that you particularly like or dislike about yourself?" were used.

Analysis of the interview allows the discovery of themes that therapists can work with. For example, one participant ("Dawn") felt anger at feeling shame for her background. "In this context her expectation to get rid of the shame is unrealistic and...there is the danger that Dawn constructs her shame as personal failure" (p215).

EXAMPLE 5G: UNSTRUCTURED INTERVIEW

Scott, S (1999) Fragmented selves in late modernity, *Sociological Review*, August, 432-460

This research is based on unstructured interviews with women suffering from Dissociative Identity Disorder (DID) (formerly known as "multiple personalities").

The open ended format allowed the researcher to explore the individual's narratives of their fragmented self ("not-I-ness"). Scott felt that the "multiple self" helped the individual to deal with two realities: their experience of childhood sexual abuse, and the fact that this experience was denied.

⁶ "Spilt personality" is not a symptom of schizophrenia. This is evidence of the misunderstanding of the disorder. Split personality is a symptom of Dissociative Identity Disorder (DID).

EXAMPLE 5H: SELF-ADMINISTERED QUESTIONNAIRE WITH OPPORTUNITY SAMPLE

Cooper, P.J & Fairburn, C.G (1983) Binge eating and self-induced vomiting in the community: a preliminary study, British Journal of Psychiatry, 142, 139-144

369 questionnaires about eating behaviour were given out to women attending a family Planning Clinic. Between October 1981 and February 1982 each woman attending one or two afternoon sessions was given a questionnaire to fill in while waiting to see a doctor.

20.6% of the respondents reported eating problems. 26.4% admitted having binge eaten "ever", 20.9% "current", and 7.4% "more than weekly". 6.5% admitted self-induced vomiting. 60% reported "feeling fat" though the vast majority of respondents were within the normal weight range. This survey highlighted the large number of women with eating problems.

TYPE ON INTERVIEW	DETAILS
1. hostile interview	interviewee does not want to give information; eg: police interrogation
2. limited survey	limited trust because interview brief; eg: market research
3. rapport interview	high level of co-operation between interviewer and interviewee
4. asymmetrical-trust interview	interviewer more powerful; eg: doctor-patient
5. depth interview	trust built up to allow questions about personal details
6. phenomenological interview	maximum trust developed, and interviewee's intimate feelings shared

Table 5.3 - Types of interview (based on Massarik 1981).

A variation on the traditional interview is that of feminist research. With this method, there is an attempt to break down the power inequality between interviewer and interviewee. The interviewee is treated as a "co-researcher", and the aim is to make the interview more collaborative. The interviewer may also share personal information where appropriate during the interview.

There are three groups of issues faced in the construction and carrying out of surveys and interviews:

i) The wording used in the questionnaire (details in table 5.4). The way the questions are phrased influences the answers given, and thus the data collected.

ii) The interviewer-interviewee interaction (table 5.5). The interview is not a neutral process of collecting data, it is a social interaction with a number of factors to consider.

iii) The sampling of respondents (table 5.6). It is important to have a representative sample, such that the findings can be generalised.

ISSUE	DETAILS
- open vs closed questions	closed questions limit information given; open questions produce data difficult to compare and/or code (Belson and Duncan 1962)
- response alternatives	number and type of response choices influence answers given; "satisfied" gets different response to "dissatisfied" (Peterson and Wilson 1992)
- question wording	not ambiguous or complex questions; not emotive or leading questions; not using technical terms; different words have different meanings (Coolican 1994)

Table 5.4 - Some issues with wording of questions in surveys.

ISSUES	DETAILS
- social desirability bias	tendency to give acceptable answer to questions
- evaluation cues	interviewee aware of how these responses will be interpreted by interviewer, and look for signs; eg: facial expression
- gender/ethnicity	differences between interviewer and interviewee produce different responses to similarity in gender or ethnicity
- honesty of answers	lie; memory error; misunderstanding of question

Table 5.5 - Some issues in the interviewer-interviewee interaction (based on Coolican 1994).

SAMPLING TECHNIQUE	ADVANTAGE	DISADVANTAGE
- random sample (every member of research population has equal chance of being chosen)	easy to sample	no guarantee of representativeness
- opportunity sample (random sample of those available)	convenient	limited choice
volunteer sample	overcomes ethical problems	volunteers not typical of general population (Ora 1965)
purposive sample eg: quota sample from different groups eg: age; gender	cross-section of population	difficult to achieve

Table 5.6 - Main types of sampling used in surveys.

DIARY METHOD

The diary method is usually the unstructured record of what is happening concerning certain behaviour over a period of time. For Breakwell and Wood (1995) this is the characteristic of the diary method - the recording of information in relation to the passage of time.

It may be kept by the researcher or the participant. Where the diary is kept by the participants, it may be subject to content or discourse analysis afterwards. There are structured versions also that record specific information only.

Bryman (2001) distinguishes three main uses of the diary method:

i) As a method of data collection - participants record details of behaviour based on instructions from the researcher.

ii) As a document - kept by individuals without instructions from researchers.

iii) As a log of the researcher's activities - most commonly in ethnographic research.

Table 5.7 shows the advantages and disadvantages of this method, and examples 5I and 5J show its use.

ADVANTAGES	DISADVANTAGES
- rich data about experience	- bias in what is recorded
- long period of time	- comparison with other diaries difficult
- record at time overcomes memory problems	- small number in study
- access to "intimate" behaviour	- diarists forgetting to record events
- can follow sequence of behaviour	- reaction to knowing someone will read it

Table 5.7 - Advantages and disadvantages of diary method.

EXAMPLE 5I: DIARY METHOD - QUALITATIVE DATA

Metcalfe (1956) quoted in Rosenhan, D.L & Seligman, M.E.P (1995) Abnormal Psychology (3rd ed), Norton: New York

A woman who suffered from asthma attacks was asked to keep a diary, for 85 days, on the events around an attack.

Asthma attacks occurred on 15 days, and 9 of them after contact with her mother. Also on the majority of days without attacks, the woman had no contact with her mother.

EXAMPLE 5J: DIARY METHOD -QUANTITATIVE DATA

Dupuy, J-B et al (2001) Worry: daily self reports in clinical and non-clinical populations, Behaviour Research and Therapy, 39, 1249-1255

A volunteer sample, in Canada, of 60 sufferers with Generalised Anxiety Disorder (GAD) and 36 controls, kept a diary for two weeks about how much time they spent worrying. The researchers created a "self-monitoring notebook" with the date marked on each of the fourteen pages.

The GAD sufferers spent on average 309.90 minutes per day worrying compared to 54.93 for the control group.

METHODS TO ELICIT RESPONSES

The task is to discover the individual's view of the world and experiences in a way less direct than asking straight questions.

REPERTORY GRID TECHNIQUE (RGT)

Based upon the ideas of George Kelly (1955), this technique attempts to discover individual's personal constructs. Personal constructs are the framework through

which individual's filter and interpret experiences and events in their lives.

Constructs are bipolar dimensions of similarity and difference that individuals use, like trustworthy-untrustworthy. These constructs are in a hierarchy with core or superordinate constructs as central, and subordinate constructs as less important.

The RGT requires the individual to think of similarities and differences between elements (eg: people in their lives), and a pattern of personal constructs will appear. The data is usually classed as qualitative, but quantitative grids have been developed.

Figure 5.1 is an example of a repertory grid, and table 5.8 compares the advantages and disadvantages of this method.

Andy's view of a sample of friends:

SIMILARITY POLE (x)	Bob	Simon	Jane	DIFFERENCE POLE (*)
lacks awareness	x	x	*	awareness
committed friend	*	x	*	not
not to be trusted	x	*	x	trusted

Figure 5.1 - Example of repertory grid.

ADVANTAGES

- rely on ability to reflect
- meanings to individual and experiences

DISADVANTAGES

- use of language may be difficult for some
- constructs oversimplify
- time consuming
- may only reveal surface constructs
- ignores unconscious, and social factors

Table 5.8 - Advantages and disadvantages of Repertory Grid Technique.

SELF-CHARACTERISATION

This is a less rigid approach to RGT, which requires the individual to "write a character sketch of yourself, as though you are in a play" (Fransella and Dalton 1990). It can be written from the points of view of, say, a friend. The aim is to discover the individual's view of themselves.

Q METHODOLOGY

Individuals are presented with cards containing phrases like "I am a friendly person". The first task is to choose those that best describe them now, then choose those for the "ideal self".

The therapist then discusses the differences between the two piles. Traditionally used in humanistic therapies.

CLINICAL OR DIAGNOSTIC INTERVIEW

The bedrock of psychiatry is the clinical or diagnostic interview. Based on a combination of structured and unstructured questions, the psychiatrist builds up the information for diagnosis.

Flexibility is the key because the patient may be unco-operative, or unable to respond to the questions. This interview is sometimes known as the Present State Examination (PSE) (Wing et al 1974).

The interview session(s) contains certain elements:

i) History-taking - details of the patient (ie: present condition and circumstances). Usually supplemented from other sources, like relatives, later. It includes family history, personal and psychiatric history (including current complaint and history of present disorder), and assessment of the personality.

ii) Mental State Examination (MSE) - this part of the interview concentrates on the mental state now.

iii) Physical examination - a medical examination may be necessary in some cases.

iv) The use of psychometric measures - more structured tests may be appropriate in certain situations.

Example 5K expands on the topics for the clinical interview, and table 5.9 gives examples of how the different parts of the clinical interview help in diagnosis. Table 5.10 is an example of the Global Assessment of Functioning (GAF) Scale used with axis V of DSM-IV (APA 1994). While the main advantage and disadvantages of the clinical interview are summarised in table 5.11.

EXAMPLE 5K: CLINICAL INTERVIEW IN PSYCHIATRY

Gelder, M; Gath, D; Mayou, R & Cowen, P (1996) Oxford Textbook of Psychiatry (3rd ed), Oxford University Press: Oxford

FAMILY HISTORY father)personality; mother)health siblings) mental illness	PERSONAL HISTORY early development; eg: problems in pregnancy childhood problems educational history occupations relationship history past medical history past psychiatric history forensic history; eg: arrests
PERSONALITY ASSESSMENT relationships now leisure activities predominant mood character attitudes and beliefs habits including tobacco/alcohol	MENTAL STATE EXAMINATION appearance behaviour speech mood depersonalisation obsessions delusions/hallucinations orientation; eg: awareness of time attention/concentration/memory insight
FOCUS OF CLINICAL INTERVIEW - family history - childhood problems - leisure activities - appearance - occupations - speech - attitudes - insight	EXAMPLE genetic basis to certain mental disorders, or living with family members with that problem Attention Deficit Hyperactivity Disorder (ADHD) often seen in individuals who are diagnosed as Anti-Social Personality Disorder in adulthood collecting newspapers and hoarding things with no use could be sign of obsession clothes, make-up, hair, and facial expressions all different between mania and depression series of jobs leaving suddenly could be sign of solitary behaviour or problems with social interactions speed and content also different between mania and depression belief that world is against them and bad things that happen are deliberately caused by others is sign of possible paranoia lack of insight about own behaviour is characteristic of psychosis

Table 5.9 - Examples of how parts of clinical interview can help in diagnosis of mental disorders.

CODE	SYMPTOMS
100	superior functioning in range of activities
70	some mild symptoms and functioning problems
40	some impairment in reality testing
10	persistent danger of hurting self or others
1	extreme danger of hurting self or others

Table 5.10 - Extracts from Global Functioning (GAF) Scale used in diagnosis of mental disorders with DSM-IV.

ADVANTAGE	DISADVANTAGES
- allows individual assessment of patient	- limited for unresponsive, overactive or confused patients
	- patients may present selves in better light ("prestige bias")
	- bias in diagnosis by psychiatrist; eg: influenced by first impressions
	- different responses given to different interviewers

Table 5.11 - Main advantage and disadvantages of clinical interviews.

There are variations in the clinical interview including the Structured Clinical Interview for Diagnosis (SCID) (Spitzer et al 1990), and the Composite International Diagnostic Interview (CIDI) (World Health Organisation 1989).

6. TESTS

- * PSYCHOMETRIC TESTS
 - Specific
 - General
 - Developmental assessments
 - Response inventories
- * PROJECTIVE TESTS

PSYCHOMETRIC TESTS

It is common practice now in clinical psychology to use psychometric tests as a means of assessing the individual or as an outcome measure in studies of the efficacy of treatment or therapy. General psychometric tests are also used.

There are many tests available. The best ones will show clearly of the criteria of reliability, validity, discrimination, and standardisation (table 6.1). Psychometric tests have a number of advantages and disadvantages (table 6.2).

CRITERION

RELIABILITY - consistent both within itself (internal reliability) and over time (external reliability).

Internal reliability established by the split-half method, Kuder-Richardson method, or Cronbach's alpha. External reliability by test-retest or parallel forms method.

VALIDITY - measure the behaviour that it claims to measure. The main types of validity are face, content, criterion (made up of concurrent, and predictive validity), and construct validity.

STANDARDISATION - when the test is first constructed, it must be adjusted to approximate to a normal distribution of scores. Most tests have norms ("normal scores") for the majority of the population.

DISCRIMINATION - individual items and the test as a whole discriminate between high and low scorers; eg: individual with severe depression should answer items different to individual not depressed. Item analysis is the main technique used here.

Table 6.1 - Criteria for good psychometric test.

Psychometric tests specific to clinical psychology

The tests may be self-administered or interviewer-administered. They may include many or a few items. There may be sub-scales as well as an overall score.

Table 6.3 shows a selection of different psychometric tests that have been designed for use with specific disorders in clinical psychology. Examples 6A and 6B show the use of the tests in practice.

ADVANTAGES	DISADVANTAGES
- individual's data can be compared to other individuals - individual's data can be compared to norms - standardised comparison between studies	- can be bias in design of questions - depends on accuracy of construction - assumes certain norms - depends on honesty of answers - need co-operation of test-taker - can be faked - depends on interpretation of results - measuring "constructs" not "existing things"

Table 6.2 - Advantages and disadvantages of psychometric tests.

NAME	DETAILS	SOURCE
<u>ANXIETY</u>		
Hamilton Anxiety Scale (HAS)	13 items; each item scored 0-4 by interviewer for last week	Hamilton (1959)
Clinical Anxiety Scale (CAS)	extension of HAS; based upon clinical interview with 63 items; scoring 0-4	Snaith et al(1982)
State-Trait Anxiety Inventory (STAI)	20 questions; self-administered; "as feel now" (anxiety as state)/ "as feels generally" (anxiety as trait)	Speilberger et al(1970)

NAME	DETAILS	SOURCE
<u>DEPRESSION</u>		
Hamilton Rating Scale for Depression (HRSD)	severity of depression measure; used in unstructured interview; 21 items	Hamilton (1967)
Beck Depression Inventory (BDI)	depth of depression measure; 21 items self-administered; each item has 4-6 statements eg: I do not feel sad 0 I feel sad 1 I am sad all the time 2 I am so sad that it is painful 3 I am so sad that I can't stand it 4	Beck et al (1961)
Montgomery-Asberg Depression Rating Scale (MADRS)	depression measure; 10 questions by interviewer; 0-4 scores for each question	Montgomery & Asberg (1979)
<u>SCHIZOPHRENIA</u>		
Positive and Negative Syndrome Scale (PANSS)	30 minute interview for schizophrenia; based around 30 items with scoring of 1 (absent) to 7 (extreme); items divided into 7 for negative sub-scale and 7 for positive sub-scale; remainder for general psychopathology scale	Kay et al (1987)
<u>GENERAL</u>		
General Health Questionnaire (GHQ)	60 self-administered questions; with 4 point scale; used to detect non-psychotic mental disorders	Goldberg (1972)
Symptom Checklist (SCL-R 90)	90 statements self-administered; 0-4 responses to each statement; "not at all" to "extremely"; eg: how much were you distressed in last 7 days by: "other people being aware of your private thoughts" 9 sub-scales - depression; anxiety; somatisation; obsessive-compulsive; interpersonal sensitivity; hostility; phobic anxiety; paranoid ideation; psychoticism	Derogatis (1977)

NAME	DETAILS	SOURCE
<u>PHOBIA</u>		
Social Phobia Inventory (SPIN)	17 items self-administered; 0-4 for each item; scores above 19 for diagnosis; eg: "fear of people in authority" 5 underlying factors: social inadequacy; self-esteem; physiological symptoms; social inferiority; avoid attention	Connor et al (2000)
<u>EATING DISORDERS</u>		
Eating Disturbance Scale (EDS-5)	eating disorders measure; 5 questions based on last 5 days; 0-7 score for each question; eg: "are you satisfied with your eating habits"	Rosenvinge et al (2001)
<u>MANIA</u>		
Rating Scale for Mania	11 items to assess severity	Young et al(1978)
<u>PERSONALITY DISORDERS</u>		
Personality Assessment Schedule (PAS)	5 diagnostic categories: sociopath schizoid; passive dependent; anankastic; normal	Tyrer & Alexander (1979)
<u>OBSESSIVE BEHAVIOUR</u>		
Yale-Brown Obsessive Compulsive Scale (YBOCS)	4 point scale for 10 symptoms administered by clinician	Goodman et al(1989)
<u>POST-TRAUMATIC STRESS DISORDER</u>		
Impact of Event Scale	15 items; scoring 0-4 on frequency and intensity; measures stress-specific symptoms; sub-scales for "intrusion" and "avoidance"	Horowitz et al (1979)
<u>PSYCHOGERIATRIC</u>		
London Psychogeriatric Rating Schedule	36 items; scoring 0-2; global level of functioning; 4 sub-scales: mental disability; sociality; irritating behaviour; disengagement	Hersch et al(1978)

NAME	DETAILS	SOURCE
<u>CHILDHOOD EMOTIONAL DISORDERS</u>		
Child Depression Inventory	27 items; self-report; measures severity of depression; aimed at 6-17 years old; scoring 0-2 on each item Factor analysis produced four factors: (i) dysphoria/body image; (ii) fatigability/crying/indecisive/failure; (iii) somatic preoccupation/sleep disturbance; (iv) anorexia/weight loss	Kovacs (1981)

Table 6.3 - Examples of specific psychometric tests used in clinical psychology.

EXAMPLE 6A: RESEARCH WITH IMPACT OF EVENT SCALE

Paton, D (1992) Disaster research: Scottish dimension, Psychologist, December, 535-538

This is a summary article of research by Paton into the effect of event seen by relief workers who, for example, worked after an Armenian earthquake in 1990. There were two groups studied here: 16 firefighters and 13 volunteers. They were given Impact of Event Scale four months after returning to Britain.

The results show that the groups were effected differently by the events. The volunteers seem to have been more prepared and less effected. A sample of the findings are in table 6.4)

ITEM FROM IMPACT OF EVENT SCALE	NUMBERS SCORING VOLUNTEERS (n = 13)	ITEM HIGHLY FIREFIGHTERS (n = 16)
Upset when reminded of it	0	12
Tried to remove it from memory	0	5
Waves of strong feeling	3	11
Bad dreams	4	1

Table 6.4 - Sample of results from Paton (1992).

EXAMPLE 6B: PSYCHOMETRIC TESTS

Vance, H.B & McGowen, R (2001) Learning disorders: real children, real problems. In Vance, H.B & Pumariega, A.J (eds) Clinical Assessment of Child and Adolescent Behaviour, John Wiley: New York

Often psychometric tests are used together in order to give a "comprehensive interpretative psychological evaluation". This is the case of Michael (7 years 8 months old) referred to Dr. Vance with possible developmental delay and possible Attention Deficit Hyperactivity Disorder (ADHD). Twelve different tests were used in the assessment.

The most important being the Wechsler Intelligence Scale for Children (WISC-III) (Wechsler 1991), and the Diagnostic Interview

Schedule for Children (Shaffer et al 1991). His parents completed the Connors' Parent Rating Scale (Connors 1991), and his teacher the equivalent (Connors' Teacher rating Scale; Connors 1991).

Overall, Michael was diagnosed, under DSM IV criteria, with "Learning Disorder". There was a co-morbidity with a number of other problems, including "Anxiety Disorders".

General psychometric tests

Researchers and practitioners also make use of general psychometric tests. These tests were constructed to measure, for example, personality, and intelligence generally. But they can help in the assessment of abnormal behaviour. Below are details of the best known personality and intelligence tests.

EXAMPLE OF PERSONALITY TEST

Minnesota Multi-Phasic Personality Inventory (Hathaway and McKinley 1943)

Originally constructed with 550 statements, the revised version (MMPI-2) in 1989 has 567 items. The respondent answers "true", "false", or "cannot say". The original version had 10 clinical scales, and 3 extra were added in the revised version. Those scales are "vulnerability to eating disorders", "tendency to abuse drugs", and "poor functioning at work". Table 6.5 shows the clinical scales of the MMPI.

EXAMPLE OF INTELLIGENCE TEST

Wechsler Adult Intelligence Scale (WAIS) (Wechsler 1955)

This popular intelligence test provides an overall IQ score, which is based on two sub-scores: verbal IQ and performance IQ.

The former is based upon, for example, vocabulary, and ability to comprehend verbal statements. The latter includes the ability to copy designs, and to associate symbols with numbers. These are seen as non-verbal abilities.

There are equivalent versions for children: Wechsler Intelligence Scale for Children (WISC III) for 6-14 year olds, and Wechsler Pre-school and Primary Scale for Intelligence (WPPSI) for 4-6 year olds.

CLINICAL SCALE	HIGH SCORERS MAIN CHARACTERISTICS	EXAMPLE OF STATEMENT
1. hypochondriasis (Hs)	preoccupied with self; numerous physical complaints	I have chest pains several times a week
2. depression (D)	moody; pessimistic	I often feel hopeless about the future
3. hysteria (Hy)	dependent; naive; repressed	My heart frequently pounds so hard I can feel it
4. psychopathic deviate (Pd)	rebellious; impulsive; anti-social	My activities and interests are often criticised by others
5. masculinity-femininity (MF)	males - sensitive females - aggressive	I like to arrange flowers
6. Paranoia (Pa)	suspicious; overly sensitive	There are evil people trying to influence my mind
7. psychasthenia (Pt)	tense; anxious; obsessional; rigid	I save nearly everything I buy, even after I have no use for it
8. schizophrenia (Sc)	withdrawn; shy; unusual thoughts/ideas	Things around me do not seem real
9. mania (Ma)	outgoing; overly energetic; amoral	At times I feel very "high" or very "low" for no apparent reason
0. social introversion -extraversion (Si)	shy; inhibited; modest; withdrawn	I am easily embarrassed

Table 6.5 - Clinical scales of MMPI.

Developmental assessments

General scale for measuring the rate of development of aspects of children's behaviour can be used to highlight disorders of development. These are standardised tests with age-related norms, and usually a battery of tests. Table 6.6 contains two commonly used examples.

EXAMPLE	DETAILS	SOURCE
Bayley Scales of Infant Development	range of items for use with 2 months to 2 year olds; items test for mental and psychomotor development	Bayley (1969)
Vineland Adaptive Behaviour Scale	covers social behaviour and competence 4 areas: communication; daily living skills; socialisation (eg: interpersonal relationships); motor skills Communication; eg: "follows instruction"; Living skills; eg: "bathes without assistance"; Socialisation; eg: "follows rules in simple games without being reminded"; Motor skills; eg: "climbs on high play equipment"	Sparrow et al(1984)

Table 6.6 - Two examples of developmental assessments.

Response inventories

These are standardised questionnaires to measure specific aspects of the individual's behaviour as reported by them. Table 6.7 lists the advantages and disadvantages of response inventories.

The main types include:

- **AFFECTIVE INVENTORIES** - similar to some forms of attitude questionnaires, the aim is to discover the individual's feelings (emotions) towards specific items.
- **SOCIAL SKILLS INVENTORIES** - these are used to ask respondents how they would behave in a variety of social situations.
For example, the Wolpe-Lazarus Assertiveness Scale (Wolpe and Lazarus 1966), which contains 30 items to be answered "yes/no", like "Do you usually keep your opinions to yourself?"
- **COGNITIVE INVENTORIES** - these aim to discover the respondent's typical way of thinking, and assumptions about the world.

Examples 6C, 6D and 6E show three different inventories.

ADVANTAGE

- direct collection of information from participants

DISADVANTAGES

- assumes that self reports are accurate
- validity and reliability often difficult to establish

Table 6.7 - Main advantage and disadvantages of response inventories.

EXAMPLE 6C: AFFECTIVE RESPONSE INVENTORY

Geer, J.H (1965) The development of a scale to measure fear, Behaviour Research and Therapy, 3, 45-53

Details of the "Fear Survey Schedule" (FSS) to measure the fear response to different objects or situations. The FSS-II has 51 items.

How much do you fear.. sharp objects?

none	very	a	some	much	very	terror
	little	little			much	

EXAMPLE 6D: RESPONSE INVENTORY

Endler, N.S et al (1975) The multidimensionality of state and trait anxiety, Reports from Department of Psychology, University of Stockholm, Sweden

Anxiety State Questionnaire measures four aspects of anxiety - (i below) cognitive, (ii) emotional, (iii) somatic, and (iv) behavioural.

How do you feel at this particular moment?

	1	2	3	4	5
(i) self-confident					
	very much				not at all
(ii) calm					
	very calm				not at all
(iii) hands moist					
	not at all				very moist
(iv) want to avoid this situation					
	not at all				very much

EXAMPLE 6E: RESPONSE INVENTORY

Rachman, S.J & Hodgson, R.J (1980) Obsessions and Compulsions, Prentice Hall: Englewood Cliffs, NJ

Maudsley Obsessive-Compulsive Inventory: 3 types of statement to be answered "true/false".

- i) Cleaning: I am not excessively concerned about cleanliness
- ii) Checking: I do not check letters over and over again before mailing them
- iii) Doubting-conscience: I have a very strict conscience

The sufferer of Obsessive-Compulsive Disorder would probably answer "false" to (i) and (ii), and "true" to (iii).

PROJECTIVE TESTS

These are ambiguous tests, and the response of the test-taker is interpreted. Traditionally, they have their origins in the psychodynamic viewpoint. Individuals "true" motives are hidden to themselves, but others can discover what is in the unconscious mind from the response to such stimuli of the projective tests. Table 6.8 lists the advantages and disadvantages of such tests.

ADVANTAGES

- unstructured which allows for richer data
- discover hidden emotions that cannot be articulated

DISADVANTAGES

- problems of scoring and reliability
- problem of accuracy of interpretation of answers

Table 6.8 - Advantages and disadvantages of projective tests.

The most commonly used tests include:

- Rorschach Ink-blot Test (Rorschach 1921)

This uses abstract drawings, and the test-taker reports what they can see. What is reported is assumed to be a projection of unconscious motives and emotions.

- Thematic Apperception Test (TAT) (Murray 1938)

This a series of 20 pictures, and the test-taker writes a brief story about what it is happening. The pictures are ambiguous: for example, a girl looking at a broken violin.

The story is interpreted for themes usually relating to the motivation to achieve. The story can be analysed for the characteristics of the hero; their motives and needs; the motives and needs of other characters; and the outcome of the story (Worchel and Dupree 1990).

- Sentence-Completion Test (Payne 1928)

This uses a series of sentences that have to be completed; eg: "my father.."

Haak (1990) notes the sort of answers to look for with children who are depressed: references to self-destruction; confusion (eg: "when I am angry.. I cry" and "when I am sad.. I cry"); responses to "I am never" or "I am always" with negative statements.

- Draw-a-Person Test (DAP) (Machover 1949)

Participants draw a person, then a person of the opposite sex. The proportion of the body parts are taken as signs.

For example, a disproportionately large or small head could reflect problems in intellectual functioning, social balance, or control of the body impulses (Comer 1998).

Example 6E shows how this technique works with a child. While Craddick and Leipold (1968) noted how male alcoholics drew smaller men compared to women.

Those working with children feel that many of these tests can have other uses. For example, Exner (1974) has standardised the Rorschach technique as a stimulus to fantasy and as a perceptual-cognitive task.

EXAMPLE 6F: DRAW-A-PERSON TEST

Knoff, H (1990) Evaluation of projective drawings. In Reynolds, C.R & Kamphaus, R.W (eds) Handbook of Psychological and Educational Assessment of Children, Guilford Press: New York

The details of "David" referred to the author at 15 years 4 months with behaviour problems and learning difficulties. He was assessed with a selection of techniques, including the Draw-A-Person test.

7. CASE STUDIES

- * CASE STUDIES
- * POST-MORTEM STUDIES OF BRAIN

This method is the bedrock of much of clinical psychology, and is concerned with collecting a large amount of information about the subject of the study, who may be an individual (example 7A) or a specific group of individuals (examples 7B and 7C). There are occasionally case studies on the self (example 7D).

Also cross-cultural studies (examples 7E and 7F) which help to show the fact that universal definitions of normal and abnormal behaviour are very difficult to make. What is normal in one culture is not so in another one. Historical case studies are also useful (example 7G).

Table 7.1 lists the advantages and disadvantages of the case study method

EXAMPLE 7A: CASE STUDY OF INDIVIDUAL

Thigpen, C.H & Cleckley, H (1954) A case of multiple personality, *Journal of Abnormal and Social Psychology*, 49, 135-151

This report contains details of a 25 year old married woman who was suffering from "severe and blinding headaches". She is called "Eve White" in order to keep her identity secret. Over a series of interviews, she starts to show other personalities, including "Eve Black", who is the complete opposite to the "main personality".

A number of tests are used on the personalities: Weschler-Bellevue Intelligence Scale, Weschler Memory Scale, Drawing of Human Figure, and Rorschach Ink-Blot Test. EEG readings of the brainwave patterns are also recorded.

A third personality called "Jane" later appears. The personalities gained different scores on the tests: "Eve White" obtained an IQ score of 110, and "Eve Black" 104.

EXAMPLE 7B: CASE STUDY OF GROUP

Weeks, D & James, J (1995) *Eccentrics*, Phoenix: London

This book details studies of eccentrics today and throughout history. The aim is to show that individuals who show the unusual behaviour of eccentrics are not mentally ill.

One hundred eccentrics were tested for symptoms of schizophrenia, and it was found that only 8% of them showed mild to moderate symptoms.

EXAMPLE 7C: CASE STUDY OF GROUP

Williams, C.C & Collins, A.A (1999) Defining new frameworks for psychosocial intervention, *Psychiatry*, 62, 61-78

Fifteen patients with schizophrenia in Toronto were interviewed for two hours about their experiences of the sense of self.

Unstructured interviews were used which allowed the interviewee to lead the direction of the interview with the information they gave.

The patients were divided into those having recovered from the first episode within the last two years, between two to ten years since the episode, and longer than ten years.

Three themes emerged from the interviews - the loss of control during the episodes of schizophrenia; the need to clarify the boundary between the self and the illness; and coping with the uncertainty of possible relapse.

ADVANTAGES	DISADVANTAGES
- builds up detailed picture - not artificial - source of future hypotheses - useful for treating individual problems - helps to discover how past influences present - studying unusual may help with usual - outstanding cases can be studied - insight can be gained from one example - tentative support for theory or challenge orthodox view - documents rare cases	- not possible to generalise findings - depends on accuracy of memory of participants when interviewed - past events sometimes explained based on current state of mind - cause and effect not possible to establish - criteria for inclusion of information is subjective - situation and time bound - poor replicability - biased observer

Table 7.1 - Advantages and disadvantages of the case study method.

EXAMPLE 7D: CASE STUDY OF SELF

Hofmann, A (1968) Psychotomimetic agents. In Burger, A (ed) Drugs Affecting the Central Nervous System (vol 2), Marcel Dekker: New York

Albert Hofmann was a chemist at a pharmaceutical company in Switzerland. He was involved in the synthesis of LSD, which he initially ingested by accident. Later he deliberately ingested 0.25mg (which is a massive dose), and wrote down his experiences.

He experienced severe hallucinations: "I had a great difficulty in speaking coherently, my field of vision swayed before me, and objects appeared distorted like images in curved mirrors...the faces of those around me appeared as grotesque, coloured masks.."

EXAMPLE 7E: CASE STUDY OF ANOTHER CULTURE

Dr.Sartorius of World Health Organisation speaking on "All in the Mind" (1991) quoted in Brewer,K (2001) Clinical Psychology, Heinemann: Oxford

In the 1980s, the Venezuelan Government decided to increase the level of general education among the population by a series of programmes under the Ministry of Intelligence.

For example, a programme to encourage literacy. The aim was to improve the nation's mental health, which is more than just the level of wealth, and to help people benefit from the country's democracy.

EXAMPLE 7F: CASE STUDY FROM ANOTHER CULTURE

Rosaldo, M (1984) Toward an anthropology of self and feeling. In Schweder, R.A & LeVine, R.A (eds) Culture Theory: Essays on Mind, Self and Emotions, Cambridge University Press: Cambridge

The Ilongot, from New Guinea, have an emotional state called "liget". This is an experience that is only for males, which reflects the structure of the society.

The possessor of "liget" sulks for a while, including stopping eating. Then at the peak of the emotional state, the possessor cuts off the head of a neighbouring tribesman (again a reflection of the society's values).

This transforms or releases the "liget", the possessor has great energy for passion with the opposite sex, and has acquired a sense of knowledge. In fact, "liget" is quite a sort after experience in the Ilongot society.

EXAMPLE 7G: HISTORICAL CASE STUDY

Miller, E (1998) Bomb bursting, lobster cracking and lengthening the brain: a disputed case of insanity at the time of the Napoleonic wars, Lecture given at Association of Teachers of Psychology Conference, Leicester, July

This is the history of James Tilly Matthews committed to Bethlem Hospital in London in January 1797. Matthews kept

reporting "attacks" by villains using an "air loom" (which Matthews made a drawing of). The villains even attacked him during sleep by "dream workings".

Matthews gave details of the gang (eg: a member called "Sir Archy"), and their aims to support the French in the current Napoleonic wars. These reports are classified today as delusions, and are seen as symptoms of psychosis.

POST-MORTEM STUDIES OF BRAIN

This technique is based upon the study of the brains of dead individuals. Traditionally used to look for differences in brain structures among individuals suffering with mental illness (example 7H) or evidence of biochemical differences (example 7I and 7J), it is now possible to study genes through their expression in post-mortem brain tissue (Harrison 1996).

There is a routine 48 hour interval between death and the post-mortem.

Table 7.2 gives the advantage and disadvantages of this method to study the brain.

ADVANTAGE

- look inside brain

DISADVANTAGE

- death may cause change to brain
- confounding variables
 - a) peri-mortem (ie: before death) eg: fever as cause of death
 - b) post-mortem; eg: method of storing body after death
 - c) miscellaneous; eg: age of individual; smoker; drug addict

Table 7.2 - Main advantage and disadvantages of post-mortem studies of the brain.

EXAMPLE 7H: POST-MORTEM STUDY OF BRAIN STRUCTURE

Highley, J.R et al (2001) Schizophrenia and the frontal lobes, British Journal of Psychiatry, 178, 337-343

The volume of white matter and cortical components of the frontal lobes were measured in the brains of 28 controls and 24 schizophrenic patients. The mean ages at death were 67-74 years for the former and 61-73 years for the latter group. Causes of death were reasonably similar. The three hospitals of origin were in England and Northern Ireland.

There was no evidence of alteration in the volume of the frontal lobe of the schizophrenic patients.

EXAMPLE 7I: POST-MORTEM STUDY OF BIOCHEMISTRY OF BRAIN

Owen, F; Cross, A.J; Crow, T.J et al (1978) Increased dopamine receptor sensitivity in schizophrenia, *Lancet*, ii, 223-226

Studies of the brains of sufferers from schizophrenia after death found an excess of the receptors for the neurotransmitter, dopamine, in the limbic system. Specifically, more D2 receptors than in the brains of non-schizophrenic individuals.

EXAMPLE 7J: POST-MORTEM STUDY OF BIOCHEMISTRY OF BRAIN

Raadsheer, F.C et al (1994) Increased numbers of corticotropin-releasing hormone expressing neurons in the hypothalamic paraventricular nucleus of depressed patients, *Neuroendocrinology*, 60, 436-444

Post-mortem studies of the brains of six depressed individuals, who committed suicide, were found to have four times more corticotropin-releasing hormone (CRH) expressing cells in part of the hypothalamus. CRH is part of the body's reaction to stress.

8. TECHNIQUES BASED ON STATISTICAL DATA

- * EPIDEMIOLOGICAL STUDIES
- * LONGITUDINAL STUDY
- * CORRELATIONAL STUDY
- * PATH ANALYSIS
- * OFFICIAL STATISTICS
- * META-ANALYSIS

This chapter looks at a group of techniques which are based on the use of statistical data.

EPIDEMIOLOGICAL STUDIES

This is a technique using large amounts of data in order to compare the rates of disease in sub-groups of the population. More precisely, Last (1988) defines it as "the study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to the control of health problems". Thus it is a method predominantly used in the health areas. Example 8A shows the general use of this method.

There are two ways of assessing the level of any illness:

a) Incidence - the number of new cases in a certain time (example 8B).

b) Prevalence - the total number of cases in the population at a given time. This is usually expressed as cases per 1000, 10 000 or 100 000 of the population (example 8C; table 8.1).

c) Risk factor - the condition or variable that increases the likelihood of the development of a disorder (example 8D).

SUICIDES IN ENGLAND IN 1988

Incidence	4838
Prevalence	12 per 100 000

Table 8.1 - Comparison of terms for suicide (figures from Samaritans website 2000).

The epidemiological study may be retrospective (example 8E) or prospective (example 8F). There are advantages and disadvantages to both types (table 8.2).

ADVANTAGES	DISADVANTAGES
RETROSPECTIVE	
- low cost	- estimates of risk less accurate
- quick results	- recall accuracy of participants
- small samples only	
PROSPECTIVE	
- less bias as information recorded before outcome	- high cost: large sample over long period of time
- multiple outcomes studied	- periodic examination of participants may influence outcome

Table 8.2 - Comparison of retrospective prospective studies.

Baldwin (2001) notes how the type of study can produce entirely different results for the incidence of a disorder. Using the example of sexual dysfunction in the population, the incidence was 14% for spontaneous reporting against 58% when directly questioned by a doctor.

Backett and Robinson (1992) outline four types of epidemiological studies:

i) cross-sectional - comparison of different groups (example 8G; table 8.3).

ii) case-control - sufferers vs non-sufferers (usually retrospective) (examples 8H and 8I).

iii) cohort - follow a particular group over time (example 8J).

iv) controlled clinical trials (chapter 3).

Beaglehole et al (1993) list two general problems with epidemiological studies:

- Selection bias in the groups being studied; ie: they are not comparable on demographic variables.
- Confounding variables - uncontrolled or intermediate variables that influence the results.

ADVANTAGES

- short term study
- not time consuming
- no problem of participants dropping out
- provides average for particular cross-sections
- results can be generalised
- replicable

DISADVANTAGES

- cohort effects ⁷
- problems of matching participants
- large number of participants needed
- describes behaviour rather than explains
- estimates of risk less accurate

Table 8.3 - Advantages and disadvantages of cross-sectional design.

EXAMPLE 8A: EPIDEMIOLOGICAL STUDY

Regier, D.A et al (1993) The de facto US Mental and Addictive Disorders Service System: Epidemiological Catchment Area prospective study: 1 year prevalence rates of disorder in services, Archives in General Psychiatry, 50, 85-94

The Epidemiological Catchment Area (ECA) study (Robins et al 1984) involves around 20 000 people in five US cities. It was started in 1980 based around the universities of Yale, John Hopkins, Washington University, Duke, and UCLA.

Initial results, using DSM-III criteria, showed a 32% lifetime prevalence for any mental disorder; 20% for annual prevalence; and 15.4% for monthly.

EXAMPLE 8B: INCIDENCE RATE

Cokker, W.J; Bhatt, B.M; Blatchley, N.F & Graham, J.T (1999) Clinical findings for the first 1000 Gulf War veterans in the Ministry of Defence's medical assessment programme, British Medical Journal, 30/1, 290-294

This is a study of 1000 British Gulf War veterans who presented themselves to the Ministry of Defence's medical assessment programme between 11 Oct 1993 and 24 Feb 1997. ICD-10 criteria were used to diagnose the symptoms shown.

190 of the sample were diagnosed with a mental disorder, mainly Post-Traumatic Stress Disorder, affective disorders, and adjustment disorder, and most cases had developed since returning to the UK.

43 more veterans had seen a psychiatrist since their return, but were diagnosed as having no psychiatric illness. However, 494 veterans showed symptoms of affective problems.

⁷ Cohort effect is confounding variable common to one group but the others.

EXAMPLE 8C: PREVALENCE STUDY

Shaw, C.M et al (1999) Prevalence of anxiety and depressive illness and help seeking in Afro-Caribbeans and white Europeans, British Medical Journal, 30/1, 302-306

Using samples from four general practices in central Manchester, the researchers calculated the one month prevalence of anxiety and depression (using ICD-10 categories).

The overall rates were 14% for one or both depression and anxiety among the white population. But there were ethnic differences: for example, Afro-Caribbean women had the highest prevalence for depression at 19%, but only 5% for anxiety.

EXAMPLE 8D: RISK FACTOR STUDY

Kessler, R; McGonagle, K; Zhao, S et al (1994) Lifetime and 12 month prevalence of DSM-III-R psychiatric disorders in US: results from National Co-morbidity Study, Archives of General Psychiatry, 51, 8-19

This is the US National Co-morbidity Study (NCS) based on 8098 individuals. The relative risk was calculated for different disorders in relation to gender, age, ethnicity, income, education, and "urbanity".

For example, for anxiety disorders, the risk factors were female, 15-34 years age group, low income, and less educated.

EXAMPLE 8E: RETROSPECTIVE STUDY

Brown, G.W & Harris, T (1978) Social Origins of Depression, Tavistock: London

Seventy-one women were chosen at random from GPs' records in Camberwell. The women had certain things in common: they were married, aged between 20-45 years old, and had children (of which the eldest child was younger than 15 years old).

Detailed histories were collected, including past experiences of clinical depression. Analysis of the data found incidences of depression linked to "provoking agents" (eg loss and disappointment), and "vulnerability factors".

There were three of these factors: having three or more children under 14 years old at home, woman's loss of own mother before age 11 years, and lack of intimate tie with partner (defined as confiding, receiving emotional support, and lack of negative reaction).

The rate of depression for women with these "vulnerability factors" was almost three times higher than those women not experiencing these factors.

The researchers also found "invulnerability factors" that prevented depression: having a job, intimate relationship with partner, no child care, and religious beliefs.

EXAMPLE 8F: PROSPECTIVE STUDY

Brown, G.W; Craig, T.K & Harris, T.O (1985) Depression, distress and disease? Some epidemiological considerations, British Journal of Psychiatry, 147, 612-622

Part of the extensive study of mental health in Camberwell, this particular study was of a random sample of 363 working-class women with children living at home. The researchers used a shortened version of the Present State Examination to collect symptomatology of depression in the sample.

Over the year of the study, 17.6% of women were diagnosed as suffering from "case depression" (full diagnosis) and 14.9% as "borderline depression". What the researchers showed was that there is a large number of women in a community population with depression, who did not see a psychiatrist.

EXAMPLE 8G: CROSS-SECTIONAL STUDY

Araya, R; Lewis, G.H; Rojas, G & Marn, A.H (2001) 'Patient knows best' - detection of common mental disorders in Santiago, Chile: cross-sectional study, British Medical Journal, 323, 79-81

A study of the detection of common mental disorders (eg: depression, anxiety) by GPs in Santiago, Chile. 815 consecutive patients seen by 11 GPs from five randomly selected clinics in northern Santiago. Individuals with chronic illness, or over 50 years old were excluded.

Before the patients saw the GP, they were interviewed and scored on the clinical interview schedule-revised.

According to the clinical interview, the prevalence of common mental disorders was 49%, but only 35% by the GPs' ratings. There was an agreement in 48% of cases; leaving 52% of cases undetected by the GPs. GPs better at spotting prevalence of common mental disorders where patients attributed their problems to psychological causes rather than physical ones.

EXAMPLE 8H: CASE-CONTROL STUDY

Casper, R.C et al (1985) Somatic symptoms in primary affective disorders: presence and relationship to classification of depression, Archives of General Psychiatry, 42, 1098-1104

The study involved a comparison of sexual dysfunction in depressed patients and controls. The depressed group was based upon those hospitalised for major depressive disorder (85 with unipolar and 47 with bipolar).

72% and 77% respectively of this group reported loss of sexual interest as the result of their depression. The control group of 80 people (age and gender matched): 5% reported loss of sexual interest. The sexual interest was assessed as loss of libido or decline of sexual desire or potency.

EXAMPLE 8I: CASE-CONTROL AND RISK ASSESSMENT STUDY

Harrison, G et al (2001) Association between schizophrenia and social inequality at birth: case-control study, *British Journal of Psychiatry*, 179, 346-350

Study of 82 "first episode cases of psychosis" in the Nottingham area over 24 month period. The birth certificate of each person was located and the next three birth certificates were used as age-gender-matched controls.

The aim was to assess the social class on the sufferers based on the biological father's occupation.

Those individuals whose fathers were social class IV or V had a doubled risk for schizophrenia; this risk was eight times greater if the individuals were also born in a "deprived area" of Nottinghamshire.

EXAMPLE 8J: COHORT STUDY

Takei, N et al (1998) First episodes of psychosis of Afro-Caribbean and white people, *British Journal of Psychiatry*, 172, 147-153

A follow-up study of 81 patients (from the Camberwell area⁸) first admitted to psychiatric hospital in 1973-4 with functional psychosis, based on ethnicity. 49 of the sample, who could be found and interviewed, were white, and the others were Afro-Caribbean.

The mean length of admission for Afro-Caribbeans diagnosed with schizophrenia was 272.8 days compared to 124.4 for whites. Also there were more mean number of admissions to hospital for Afro-Caribbeans (average 5.3 vs 3.4). The Afro-Caribbeans had a much higher odds ratio for involuntary admissions (ie: "sectioning") under Mental Health Act 1983.

LONGITUDINAL STUDY

This technique can be applied to many methods and is based upon studying individuals over a long period of time (table 8.4). Examples 8K and 8L are traditional uses of this method, but example 8M is slightly different - a longitudinal study of one person.

⁸ Part of the Camberwell Cumulative Psychiatric Case Register which recorded all contacts with psychiatric services in Camberwell (Wing et al 1968).

ADVANTAGES

- development of specific individuals can be followed
- participant variables controlled
- can observe past events and development in life
- useful to follow through "treatment"

DISADVANTAGES

- often small sample used
- time consuming/expensive
- problems of participants dropping out of study
- cohort effect: certain characteristics relevant to certain generations; eg: experience of WW II
- any mistakes at start of study cannot be removed; eg: unrepresentative sample
- problems of generalising results
- difficult to replicate
- participants may be influenced by attention and repeated testing
- obsolescence in very long term studies

Table 8.4 - Advantages and disadvantages of longitudinal study.

EXAMPLE 8K: LARGE SCALE LONGITUDINAL SAMPLE

Sadowski, H et al (1999) Early life disadvantage and major depression in adulthood, British Journal of Psychiatry, 174, 112-120

The Newcastle Thousand Family Study (Spence et al 1954) attempts to follow 1142 children born between 1st May and 30th June 1947 in the Newcastle-upon-Tyne area of northern England.

This study focused on the level of family disadvantage in the first five years and the mental health of the individuals at 33 years old. Family disadvantage includes divorce or separation of parents, parental illness, poor physical care of the child and the home, and overcrowding.

Those individuals who experienced multiple disadvantages were four times more likely to suffer from depression as an adult. For females, this was particularly linked to the quality of parenting in the early years.

EXAMPLE 8L: LONGITUDINAL STUDY

Parnas, J et al (1993) Lifetime DSM-III-R diagnostic outcomes in the offspring of schizophrenic mothers. Results from the Copenhagen high-risk study, *Archives of General Psychiatry*, 50, 707-714

A thirty year study of children in Copenhagen born in 1962. 207 of the sample were born to mothers with schizophrenia (the high risk group), and 8.6% of this group developed schizophrenia themselves in adulthood. The control group of 104 had a 1% prevalence rate of schizophrenia.

In the high risk group, two key factors emerged in the development of schizophrenia: traumatic birth/birth complications, and unstable parenting.

EXAMPLE 8M: LONGITUDINAL STUDY OF ONE PERSON

Peterson, C; Luborsky, L & Seligman, M.E.P (1983) Attributions and depressive mood shifts: a case study using the symptom-control method, *Journal of Abnormal Psychology*, 92, 96-103

A longitudinal study of "Mr.Q" attending psychotherapy over four years. He showed severe mood changes during some sessions.

The researchers analysed the spoken words from 800 word segments of "Mr.Q" in three different types of sessions: those in which he became more depressed (four sessions), became less depressed (five sessions), and no change (three sessions). The focus was upon the attributions "Mr.Q" made for bad events in psychotherapy.

Internal, stable and global attributions were scored; ie: where the client sees the cause as something about themselves: eg: "I am not clever".

High internal, stable, global attribution scores were associated with the sessions where "Mr.Q" became more depressed, and low scores where he became less depressed.

CORRELATIONAL RESEARCH

Comparing statistics to establish relationship between two variables. This can be done at one point in time (examples 8N and 8O) or over a period of time (example 8P). Table 8.5 lists the advantages and disadvantages of this method.

EXAMPLE 8N: CORRELATION AT ONE POINT IN TIME

Sears, R.R (1936) Experimental studies of projection: I. Attribution of traits, *Journal of Social Psychology*, 7, 151-163

Projection is a Freudian unconscious defence mechanism where individuals criticise characteristics in others that they themselves have but cannot accept. Sears prefers the term "disowning".

Using students living together, they were asked to rate themselves and the other students on four characteristics:

stringiness, obstinacy, disorderliness, and bashfulness.

Students were classed as "with insight" if their self ratings were similar to how others rated them, and "without insight" if a large discrepancy here.

It was found that individuals "without insight" were more likely to project the traits on to others. Thus a correlation between the "insight" level and the rating of negative traits in others.

ADVANTAGES

- not artificial
- only method in some cases, particularly where experiments inappropriate
- best for discovering relationships when large amount of data

DISADVANTAGES

- cannot show causation
- assumptions may be made based on results
- statistics can show "spurious" correlations; ie: 3rd variable involved

Table 8.5 - Advantages and disadvantages of correlational research.

EXAMPLE 80: CORRELATION

Rosenthal, N.E et al(1984) Seasonal Affective Disorder: a description of the syndrome and preliminary findings with light therapy, Archives of General Psychiatry, 41, 72-80

29 sufferers of Seasonal Affective Disorder in the USA reported their level of depression month by month. This was compared to the mean minutes of daylight at the Smithsonian Radiation Biology Lab in Maryland.

There was a clear negative correlation between the amount of daylight and the level of depression.

EXAMPLE 8P: CORRELATION OVER TIME

Button, E.J et al (1996) A prospective study of self-esteem in the prediction of eating problems in adolescent schoolgirls: questionnaire findings, British Journal of Clinical Psychology, 35, 193-203

Measured self-esteem of 594 schoolgirls at age 11-12 years old, then 400 found four years later. A significant correlation was found between ratings of self-esteem at 11-12 years and "eating problems" at 15-16 years old.

Self-esteem was measured by the Rosenberg Self-esteem Scale (Rosenberg 1965), and "eating problems" by Eating Attitudes Test (EAT-26) (Garner et al 1982).

In particular, a significant correlation between low self-esteem at 11-12 years old and "feel too fat" at 15-16 years.

PATH ANALYSIS

This is a complex statistical technique that attempts to look at the correlations between a number of variables rather than just two (example 8Q). It assumes that observed data is due to latent (unobserved) variables (Raulin and Graziano 1995).

Owens, Slade and Fielding (1989) argue that path analysis can help in building causal models and theoretical ideas by the estimation of specific causal impacts. For example, three variables can be examined for their influence on behaviour: life stress (A), interpersonal problems (B), and body dissatisfaction (C) with dieting behaviour (D). There are two main relationships that could be hypothesized:

- | | |
|--|--|
| a) life stress and interpersonal problems cause body dissatisfaction which causes diet behaviour | b) life stress and interpersonal problems also contribute to diet behaviour itself |
|--|--|

EXAMPLE 8Q: PATH ANALYSIS

Chassin, L et al (1999) A longitudinal study of children of alcoholics, *Journal of Abnormal Psychology*, 108, 1, 106-119

A study over seven years of 246 adolescents with at least one biological parent who was diagnosed with alcohol abuse or dependency, compared to 208 adolescents in the control group. Around 53% of the former group was diagnosed with alcohol abuse or dependency compared to 25% of the control group.

The researchers built a statistical path model to show the variables involved in the development of alcohol problems. The significant factors were paternal alcoholism and adolescent alcohol use. This latter factor was influenced by parent anti-social personality disorder, the age of the child, and paternal alcoholism again. Maternal alcoholism had less effect.

Paternal alcoholism was also found to be important in the development of drug problems, depression, and anxiety disorders in the adolescents.

OFFICIAL STATISTICS

The data collected by governments is extensive. Because with Population Censuses, for example, response is obligatory, this gives comprehensive information. It is not without problems (table 8.6). Examples 8R, 8S, and 8T are three different uses of government statistics.

ADVANTAGES

- unobtrusive
- examine trends over long period
- comprehensive source of data

DISADVANTAGES

- necessary material sometimes hard to obtain
- official definitions differ
- Government information only; ie: not all cases reported

Table 8.6 - Advantages and disadvantages of use of official statistics.

EXAMPLE 8R: OFFICIAL STATISTICS

Office for National Statistics (2001) Social Trends No 31, HMSO: London

The Office for National Statistics used data from the 1991 Population Census on which to base the official Government figures, and the responses from GPs.

For example, the prevalence of "treated depression" was calculated at rates per 1000 of the population. Between 1994-8, the rate for women was 61 and 25 for men. But these figures varied depending on the type of area in which the individual lived: a rate of 77 for women living in "deprived industrial areas" to 21 for males in "suburbia".

The figures do not include individuals with depression who did not seek help from GPs.

EXAMPLE 8S: OFFICIAL RECORDS

Hotopf, M et al (2000) Changing patterns in the use of Mental Health Act 1983 in England 1984-96, British Journal of Psychiatry, 176, 479-484

This is a record of the formal admissions to psychiatric hospitals in England between 1984-96 under the Mental Health Act 1983 using Department of Health and Home Office figures.

Formal admissions increased from 16 044 (1984) to 26 308 (1996), mainly due to Part II sections 2 (admission for assessment for 28 days) and 3 (admission for treatment for 6 months).

But admissions under sections 4 (emergency assessment for 72 hours) and 37 (hospital order for prisoners for 6 months) fell in the same period.

EXAMPLE 8T: OFFICIAL STATISTICS

Taylor, P.J & Gunn, J (1999) Homicides by people with mental illness: myth and reality, British Journal of Psychiatry, 174, 9-14

Using Home Office crime statistics for England and Wales between 1957 and 1995, this study aimed to see if homicides have become more frequent by individuals with mental illness.

Overall there is little change in the number of people with mental illness committing such behaviour. For example, in 1957, the figure was 41, and 60 in 1995.

In fact, there is a 3% annual decline in their contribution to the statistics; ie: as homicides increase, those committed by people with mental illness increases at a slower rate.

There are limitations to these figures because of the lack of distinction of mental illnesses in the categories of statistics.

META-ANALYSIS

This is a technique of statistical analysis of the results from a large number of individual research studies, so as to integrate the findings (Wood 1995). It is particularly used when there are many studies in one area, and a form of summary is required. The usual focus is the calculation of an "effect-size" known as "d" ⁹). In other words, an attempt to re-analyse and standardise the data from the different studies. Table 8.7 compares meta-analysis to a traditional literature review.

Smith and Egger (1998) point out three problems with the use of meta-analysis:

i) whether to include unpublished data or not. The authors report a study by Nakielny (1993) which used unpublished data on the efficacy of selective serotonin reuptake inhibitors (SSRI) over tricyclic antidepressants (TCA). It showed a much greater success rate for the SSRIs than other similar studies using only published data. Nakielny was sponsored by Lilly Industries, who make a type of SSRI.

Another problem is that studies finding no significant differences are not published (known as the "file-drawer problem");

ii) what choice of outcome measures to use;

iii) definitions of terms in each study may vary. "Each study gets exactly one 'vote' no matter how well done it is. Thus, a study using a large sample that is well controlled has the same weight as a study using a smaller sample that is more poorly controlled" (Rosenhan and Seligman 1995).

Examples 8U and 8V are meta-analyses of drug efficacy studies, while 8W is a meta-analysis of therapy.

⁹ $d = (\text{mean of experimental group}) - (\text{mean of control group})$, then divided by standard deviation of control group (Glass et al 1981).

LITERATURE REVIEW

- qualitative
- selected coverage
- individual studies
either statistically
significant or not

META-ANALYSIS

- quantitative
- comprehensive coverage
- overall magnitude of change
possible to calculate

Table 8.7 - Comparison of meta-analysis with traditional literature review.

EXAMPLE 8U: META-ANALYSIS OF NEUROLEPTIC DRUG

Thornley, B; Adams, C.E & Awad, G (1997) Chlorpromazine vs placebo for those who schizophrenic. Reported in Evidence-Based Medicine (1998), Nov/Dec, p171

Meta-analysis of 42 studies comparing chlorpromazine (neuroleptic or anti-psychotic drug) with a placebo or no treatment for schizophrenia. The studies were specially selected to meet certain criteria (eg: randomly controlled trials), and then the results were re-analysed.

Overall a standardised conclusion can be drawn. The chlorpromazine groups had a relapse rate of 55% within 5 years compared to 83% for the control groups. While, for the latter, 13% showed global improvement in 6 months against 30% for the drug groups.

But most of the studies were between 1960 and 1980 (Barnes 1998).

EXAMPLE 8V: META-ANALYSIS OF ANTI-DEPRESSANT

Beasley, C.M et al (1991) Fluoxetine and suicide: a meta-analysis of controlled trials of treatment for depression, British Medical Journal, 303, 685-692

This meta-analysis involved 17 randomly controlled trials comparing the anti-depressant "fluoxetine" with placebo, or tricyclic anti-depressants using patients with major depressive disorder. The outcome measures used related to suicidal ideation as measured by the Hamilton Depression rating Scale.

There was found to be no association between fluoxetine and increased risk of suicidal acts or emergence of suicidal thoughts among depressed patients.

But patients at high risk of suicide were excluded from the trials (Anderson 2001).

EXAMPLE 8W: META-ANALYSIS OF THERAPY

LeBlanc, M & Ritchie, M (2001) A meta-analysis of play therapy outcomes, Counselling Psychology Quarterly, 14, 2, 149-163

A meta-analysis of 42 studies of play therapy were carefully collected. The researchers found an outcome effect that placed play therapy as effective as non-play therapy in treating

children experiencing emotional difficulties.

Inclusion of the parents in the therapeutic process, and longer duration of therapy (eg: 30 sessions) increased effectiveness. But it was not possible to distinguish the characteristics of effective treatment from ineffective treatment.

9. PHYSIOLOGICAL BASED TECHNIQUES

- * BRAIN SCANNING AND RECORDING
- * NEUROPSYCHOLOGICAL TESTS
- * BIOCHEMICAL TECHNIQUES
- * GENETICS
- * PSYCHOPHYSIOLOGICAL MEASURES

The aim of this group of techniques is to find out about the physiological states that underlie psychological problems. For example, organic mental disorders, like dementia, have clear physiological bases.

BRAIN SCANNING AND RECORDING

These are different ways of assessing damage to the brain that might affect thought or behaviour. Table 9.1 shows the advantages and disadvantages of brain scans.

Brain scans can be used in a number of ways:

i) To study the biochemistry in the brain; eg: the action of neurotransmitters through the binding of molecules (in vivo receptor binding) with PET scans.

ii) For the measurement of cerebral blood flow; eg: the use of water proton signals with MRI scans.

iii) Closely linked to (ii) is the measurement of cerebral metabolism; eg: the rate of use of oxygen or accumulation of deoxyglucose shows the active parts of the brain in PET scans.

iv) To assess structural brain differences; eg: the reduction in certain brain areas in CAT scans.

Most PET scan experiments use neuropsychology challenge studies; ie: specific tasks to perform for both control and experimental group, so that the active brain can be compared. The Wisconsin card sorting task (WCST) (Berg 1948) is commonly used.

This test is a series of cards of different colour, form or numbers, and the task is to match them in the two packs.

ADVANTAGES

- detailed pictures of living brain
- watch changing brain

DISADVANTAGES

- health risks ¹⁰
- expensive to use
- differences found often only small in magnitude
- many studies have no control group
- differences only correlates, not necessarily causation

Table 9.1 - Advantages and disadvantages of brain scans

There are three main types of scans, and they are compared in table 9.2.

	ADVANTAGES	DISADVANTAGES
CAT SCANS	detect damage to brain	cannot show functions of brain, only structure
MRI	detailed picture	as above
PET SCANS	shows active brain	shows activity over 60-sec period rather than moment by moment

Table 9.2 - Comparison of the three main types of brain scans.

COMPUTERISED AXIAL TOMOGRAPHY (CAT SCANS)

A 3D X-ray picture of the static brain based on many X-rays from different angles and then combined together by the computer. X-ray machines are based on the principle that abnormal tissue absorbs X-rays to different degree to normal tissue. It is best at showing the presence of blood clots, tumours, and enlarged ventricles (example 9A).

There is a small risk from the X-rays if CAT scans are used too often on the same individuals.

EXAMPLE 9A: CAT SCAN

Owens, D et al (1985) Lateral ventricular size in schizophrenia: relationship to the disease process and its

¹⁰ 10 PET scans or 2 SPECT scans are same as annual background radiation exposure (Liddle 1996).

clinical manifestations, *Psychological Medicine*, 15, 27-41

A British study based on a sample of 112 hospitalised patients with schizophrenia. CAT scan results showed that lateral ventricular size increased more often in the patients than controls. In other words, the brain substance was reduced. The type of treatment was found to play no role either.

POSITRON EMISSION TOMOGRAPHY (PET SCANS)

This is able to show the active brain by following the movement of a radioactive substance that has been injected into the brain. Radioactively labelled glucose molecules travel to active areas of the brain. When the radioactive atoms decay, they emit positrons (sub-atomic particles). These encounter electrons (the opposite type of particles) and both are annihilated. This gives rise to gamma rays that travel in opposite directions, and these can be traced to the point of origin.

Its strength is the ability to show blood flow patterns in the brain, which can be affected by, for example, strokes.

Different radioactive tracers can be used to target different aspects of the brain's activities, like blood flow (example 9B), glucose metabolism, dopamine receptors, or MAO activity (Grasky et al 1996).

Because a small amount of radioactivity is involved, the World Health Organisation recommends one PET Scan per five years.

EXAMPLE 9B: PET SCAN

Baxter, I et al (1992) Caudate glucose metabolic rate change with both drug and behaviour therapy for obsessive-compulsives, *Archives of General Psychiatry*, 49, 681-689

Based upon 18 patients with obsessive-compulsive disorder given either drug therapy or behaviour therapy. Initial PET Scans showed high levels of activity in the caudate nucleus in the right hemisphere when suffering an attack of the disorder.

13 of the patients responded to the treatment, and, in a second PET scan, the caudate nucleus was less active.

NUCLEAR MAGNETIC RESONANCE IMAGING (MRI)

This technique also shows the static brain, through the use of magnetic fields (example 9C). It works by measuring the hydrogen atoms in water. The hydrogen nuclei are exposed to strong magnetic fields and line up like tiny magnets. Then they are hit with radio signals which causes them to move out of alignment. This produces a signal that can be measured.

This is no need for radioactive substance to be injected, but there is concern about the effect of the strong magnetic field on the body.

EXAMPLE 9C: MRI SCAN

Johnstone, E. C et al (1989) Temporal lobe structure as determined by nuclear magnetic resonance in schizophrenia and bipolar affective disorder, *Journal of Neurology, Neurosurgery and Psychiatry*, 52, 736-741

Three groups of participants received MRI scans: 21 individuals with schizophrenia, 20 with bipolar disorder, and 21 controls. The former group showed two brain structure differences compared to the others: larger temporal horns of the lateral ventricles, and a reduction in left temporal lobe area.

NEWER NEUROIMAGING TECHNIQUES

- Single-photon emission computed tomography (SPECT): sensitive measure of blood flow in brain
- Magnetic resonance spectroscopy (MRS): unpaired photons and neutrons aligned with magnetic field. Radio frequency pulsing causes nuclei to absorb and emit energy. This produces spectrum of brain's chemical compounds.

There are different types of MRS: for example, observing the proton nucleus in the hydrogen atom, or the stable isotope of phosphorous (Frangou and Williams 1996). Table 9.3 shows some of the findings with this technique.

- Functional magnetic resonance imaging (fMRI): detects tissue mass based on blood flow, by measuring change in deoxyhaemoglobin when neurons active. There is no need for radioactive tracer (Liddle 1996).
- Magnetoencephalography (MEG): change in magnetic fields in cortical neurons can be detected by magnets placed on scalp. Liquid helium coiled superconducting sensors used to pick up faint magnetic fields. Does not have localised accuracy of MRI scans.

DISORDER	FINDINGS
schizophrenia	reduced phosphomonoester (PME) levels; increased phosphodiester (PDE) levels in prefrontal cortex in 1st episode schizophrenics before drug treatment
anxiety	change in brain lactate concentrations
autism	phosphate differences
affective disorder	increased PME levels

Table 9.3 - Summary of biochemical findings from MRS (based on Frangou and Williams 1996).

ELECTROENCEPHALOGRAM (EEG)

This method records the general electrical activity of the brain by attaching electrodes to the scalp. The brain waves vary in frequency (the number of oscillations per second), and in amplitude (measured as half the height from the peak to the trough). One complete oscillation is a cycle, and cycles per second (cps) are measured.

Adults with brain tumours, while awake, for example, show delta waves which are usually found in infants and sleeping adults. Psychopaths (anti-social personality disorder) also show different patterns (example 9D).

EXAMPLE 9D: EEG

Kurland, H.D; Yeager, C.T & Arthur, R.J (1963)
Psychophysiological aspects of severe behaviour disorder, Archives of General Psychiatry, 8, 599-604

EEG readings of about half of a group of particularly violent individuals with Anti-Social Personality Disorder show different brainwave patterns to the general population. They are slow brainwave patterns common to children (theta waves), and "positive spikes" (sudden bursts of brain activity). This latter response is associated with impulsive behaviour.

NEWER TECHNIQUE

- Evoked potentials: measurement of small groups of cells; more sensitive than EEG. Recordings made in scalp and neck away from main EEG regions of spinal cord, brainstem and cortex.

NEUROPSYCHOLOGICAL TESTS

These are a series of tests that attempt to fathom organic problems in the brain by setting different tasks. Three are the best known are detailed below, along with their advantage and disadvantage (table 9.4)

ADVANTAGE

- standardised

DISADVANTAGE

- limited use

Table 9.4 - Main advantage and disadvantage of neuropsychological tests.

BENDER VISUAL-MOTOR GESTALT TEST (Bender 1938)

Nine cards of simple designs to copy and then recall later. Errors in recall or copying are taken as signs of organic memory problems. A scoring system has been devised to measure 13 criteria, including the time taken (Groth-Marnat 1997).

HALSTEAD-REITAN NEUROPSYCHOLOGICAL TEST BATTERY (Reitan and Wolfson 1985)

This series of tests attempts to assess the individual's capacity for perceptual, sensorimotor, and memory skills. There are six main sub-tests, but also many other optional ones. For example, one task is to categorise items as similar or different. Failure here is evidence of general brain damage.

While a "dynamometer" measuring the strength of grip can help to show specific brain damage. Other tasks include placing blocks into holes on a board while blindfolded, and to tap rapidly on a small lever. The whole test can take six hours to administer.

LURIA-NEBRASKA NEUROPSYCHOLOGICAL BATTERY (Golden et al 1979)

This test battery contains 269 items to measure a variety of skills: including verbal and spatial skills, writing, reading, and complex motor co-ordination. The pattern of scores can be used to reveal brain impairments. There is also a children's version. The updated version has reduced the number of items.

BIOCHEMICAL TECHNIQUES

From the analysis of biochemicals in the body, it is possible to discover underlying physiological processes, particularly compared to normal processes.

Biochemical techniques are based around two main techniques:

i) The measurement of body fluids (examples 9E and 9F): for example, it is possible to detect the presence of drugs in the urine and/or blood when screening addicts. Miller (1995) notes two main methods used here: chromatographic techniques, which separate molecules, and competitive binding/immunoreactive techniques, which employ antibodies against specific drugs.

While alcohol levels can be assessed by estimations of gamma-glutamyl-transpeptidase (GGT) (liver enzyme) in blood, mean corpuscular volume (MCV), or blood alcohol concentration (Gelder et al 1996).

ii) The infusion of substances (example 9G): the most common technique here is the use of pharmacological substances in order to see the effect on neurotransmitters. Most often this is done on non-human animals.

It is also important to use these techniques to eliminate physical causes for behaviour (example 9H).

There are a number of problems with biochemical measures (Gelder et al 1996):

a) The findings are only correlations between biochemical changes and particular behaviour.

b) These methods are indirect and not always easy to interpret the results.

c) The presence of confounding factors: for example, the measurement of biochemicals in urine affected by diet; changes in blood plasma tryptophan can be a sign of serotonin changes in depression, or of dieting.

d) Practical difficulties of measuring the fluids, like cerebrospinal fluid (cushioning liquid in the central nervous system) which contains neurotransmitter metabolites (ie: byproducts after neurotransmitters used).

e) Ethical difficulties in invasive techniques; eg: blood sample by injection of syringe.

EXAMPLE 9E: MEASURING NEUROTRANSMITTERS

Lidberg, L et al (1978) Urinary catecholamines, stress and psychopathy: a study of arrested men awaiting trial, *Psychosomatic Medicine*, 40, 116-125

A sample of 24 arrested men, aged 18-29 years old, gave urinary samples in two different situations. The samples were analysed for the excretion of adrenaline and noradrenaline, which are signs of a physiological stress response.

The group were divided into high or low psychopathy based on three scales: Gough Delinquency, Solidarity, and Stability Scales.

The two situations were a mildly stressful lab experiment two weeks before the individual's trial, and immediately before court appearance. The "high psychopathy" group did not produce increased adrenaline and adrenaline in either stressful situation.

EXAMPLE 9F: GLUCOSE LEVELS

Virkunnen, M & Huttunen, M (1982) Evidence for abnormal glucose tolerance test among violent offenders, *Neuropsychobiology*, 8, 30-34

Blood glucose levels are relatively stable in most individuals, and normal changes are linked to food intake. But, for some individuals, variations in these levels may account for problem behaviour.

Using glucose tolerance testing methods ¹¹ with Finnish participants, the researchers found that hypoglycaemia ¹² was present more often in violent individuals with a diagnosis of Anti-Social Personality Disorder. As compared to violent offenders and non-violent Anti-Social Personality Disorder diagnoses.

HORMONE LEVELS

Plasma hormone levels can be used to measure hormone secretions, like corticosteroids and stress, and neurotransmitters (eg: pituitary gland secretion controlled by neurotransmitters).

Neuroendocrine challenge tests stimulate neurotransmitters by specific drugs, whose action is known, to see the effect on blood plasma hormone levels. For example, stimulation of serotonin increases prolactin levels (released by pituitary gland).

Evidence of impairments in these processes can be

¹¹ The most common method used is the oral glucose tolerance test (OGTT). After an overnight fast, the participant drinks 75g of glucose dissolved in water, and blood glucose levels are measured before and two hours after drinking. The results are compared to normal values (Wilding and Williams 1997).

¹² Severe change in blood glucose levels due to too much insulin or not enough food.

discovered by knowledge of the normal processes. The neuroendocrine challenge test can also be used to assess the effect of psychotropic drugs.

EXAMPLE 9G: INFUSION OF SUBSTANCE

Balon, R; Pohl, R; Yeragani, V.K et al (1988) Follow up study of control subjects with lactate and isoproterenol induced panic attacks, American Journal of Psychiatry, 145, 238-241

A group of volunteers with panic disorder, and a control group agreed to receive an infusion of sodium lactate of 0.5m intravenously over 20 minutes. The researchers were interested in how many of the participants reported symptoms similar to panic disorder.

They found that 25% of the control group and 85% of the panic disorder group reported such symptoms.

It has been argued that lactate sensitivity is the cause of panic disorder.

EXAMPLE 9H: BIOCHEMICAL TECHNIQUES TO ELIMINATE CERTAIN CAUSES

Flynn, F.G & Mueller, J (2000) Physical examination and laboratory evaluation. In Goldman, H.H (ed) Review of General Psychiatry (5th ed), Lange Medical Books: New York

DEMENTIA

Psychiatrists need to rule out potential physiological causes of dementia in the process of diagnosis. The main areas are:

- i) Blood, plasma or serum levels; eg: white blood cell count, vitamin B12 level, folic acid, lactic acid.
- ii) Antigen and antibody test; eg: fluorescent treponemal antibody absorption (FTA-ABS) for syphilis.
- iii) Lumbar puncture (LP) to detect haemorrhaging in the central nervous system. This involves an examination of a sample of the cerebrospinal fluid.

DEPRESSION

a) measures of:

catecholamine	a metabolite (MHPG) ¹³ of noradrenaline reduced in patients with severe depression
serotonin	a metabolite (5-HIAA) ¹⁴ of serotonin found to be low

¹³ 3-methoxy-4-hydroxyphenylglycol

¹⁴ 5-hydroxyindoleacetic acid

	in cerebrospinal fluid of depressed individuals
other neurotransmitters	plasma levels of GABA low in anxious depression
b) dexamethasone suppression test ¹⁵	this is able to help in the measurement of serum cortisol levels, which are linked to the hypothalamic-pituitary-adrenal axis (and Cushing's disease)
c) thyrotropin-releasing hormone (TRH) stimulation test	an injection of TRH produces the stimulation of thyroid-stimulating hormone (TSH); possible to tell those whose depression caused by thyroid problems
d) thyroid function tests	eg: measurement of thyroid autoantibodies

MISCELLANEOUS

- Amniocentesis: a small amount of amniotic fluid taken from womb after 13th week of pregnancy. This can be examined for chromosomal abnormalities, like Fragile X syndrome or Down's syndrome.
- Chrionic villus sampling (CVS): sampling of cells from a woman's cervix between 8-12th week of pregnancy. This is also a test for chromosomal abnormalities. However, it is less accurate than amniocentesis (Rosenhan and Seligman 1995).

GENETICS

Genetic explanations are highly sort today because of the growing knowledge about genes from the "Human Genome Project". Technological advances have allowed more detailed studying of genes.

Those searching for genetic causes to mental disorders are looking for single genes, polygenes, or chromosomal abnormalities.

LINKAGE STUDIES

This technique seeks to identify the position of a

¹⁵ Dexamethasone suppression test involves administering 1mg dose of synthetic corticosteriod, dexamethasone, which should suppress normal cortisol secretion.

particular gene on the chromosome by studying the existence of particular "marker" genes. The aim is to see the extent to which two genes "stick together". In other words, the knowledge of the "marker" gene is used; eg: colour blindness is clearly linked to other particular genes.

Groups of allele are connected to each other on chromosomes, and as passed through generations the pair may move.

This technique is used when searching for a candidate gene. Usually a hypothesis has been proposed as to the likely genes. Also association studies can establish the frequency of different alleles (variations in genes at the same locus) for a particular gene between patients and controls, and between patients and their parents. Table 9.5 summarises a number of findings using these methods.

Complex statistical analysis is usually applied to the findings; for example, quantitative trait loci (QTL) (Craddock and Owen 1996). This technique is most useful in polygenic situations to try the estimate the important of individual genes.

Other statistical techniques used include structural equation modelling (SEM). Because it is not possible to see the effect directly of certain variables, this method aims to find correlations which can be observed. Ideas like this have been developed in biometrics (eg: Clifford et al 1984).

TYPE OF STUDY	FINDINGS
Linkage studies	- early onset Alzheimer's: chromosome 21 and 14 - bipolar disorder: chromosome 18
Association studies	- Alzheimer's and apolipoprotein E (ApoE) allele on chromosome 19 - negative association between low activity form of ALDH2 (aldehyde-dehydrogenase-class 2) on chromosome 12 and alcoholism

Table 9.5 - Summary of findings with linkage and association studies (based on Sham 1996).

CYTOGENIC STUDIES

These techniques aim to identify structural

abnormalities in the chromosome, and the consequent effect of the abnormality. For example, with Down's syndrome, there is a additional chromosome (trisomy), or one chromosome is unusually large because a segment of another chromosome has become attached (translocation). Both cases usually related to chromosome 21.

MOLECULAR GENETICS

Techniques allowing specific DNA to be studied and sequenced have been developed. The aim is to detect non-random sharing of alleles at genetic marker in individuals affected by disease which may suggest close proximity of marker and disease gene.

There are two main methods here:

i) Functional cloning - where the biochemistry is known, this technique looks for mutations in the coding or control sequences of genes which change gene's protein production.

For example, there is a search for the gene that encodes the relevant protein in the case of phenylketonuria (PKU) (which causes irreversible brain damage).

ii) Positional cloning - where the biochemistry is not known, this is the search for genes by comparing patients and controls. For example, presenilin-1 gene on chromosome 14 found in majority of families with autosomal dominant familial Alzheimer's (Craddock and Owen 1996).

PSYCHOPHYSIOLOGICAL MEASURES

Barnett (1995) defines psychophysiological measures as recording the interactions between physiological and psychological phenomena.

CARDIOVASCULAR MEASURES

The most common measure here is electrocardiography (ECG), which records the electrical potentials generated by heart muscles. Example 9I measures the heart rate.

EXAMPLE 9I: CARDIOVASCULAR MEASURES

Venham, L: Bengston, D & Cripes, M (1977) Children's responses to sequential dental visits, *Journal of Dental Research*, 56, 455-

The researchers were interested in assessing children's responses to visiting the dentist. They used a measurement of heart rate to establish levels of anxiety, along with observation of the children's behaviour, and self-reports by the children themselves.

Three independent judges were the observers, using a six point scale, based on videotapes. There was a high correlation between the observers' rating of anxiety and the heart rate measure.

RESPIRATORY FUNCTION

Abdominal respiratory rates and depth can be measured (example 9J).

EXAMPLE 9J: RESPIRATORY MEASURES

Griez, E et al (1988) Effects of low pulmonary carbon dioxide on panic anxiety, *Comparative Psychiatry*, 29, 490-497

Respiration problems or fear of them is a component of panic disorder. This research tries to establish the role of hyperventilation and panic attacks. Hyperventilation is an increase in ventilation in excess of metabolic need so that carbon dioxide decreases in the lungs. Ultimately this leads to less blood to the brain.

This research asked volunteers diagnosed with panic disorder to hyperventilate for several minutes; thus reducing the carbon dioxide in their lungs by half. They failed to report any symptoms of a panic attack. It seems that simply hyperventilating is not the cause of panic attacks.

GALVANIC SKIN RESPONSE (GSR)

Electrical activity is recorded by measuring the speed of the current across the skin between two points. The presence of sweat will increase the speed as water increases conductivity. It is used as a measure of underlying arousal (example 9K).

EXAMPLE 9K: GSR MEASUREMENT

Hare, R (1965) Temporal gradient of fear arousal in psychopaths, *Journal of Abnormal Psychology*, 70, 442-445

An experiment to study the anticipation of punishment as measured by GSR among criminals diagnosed as Anti-Social Personality Disorder, criminals without this diagnosis, and non-criminals.

Participants were presented with the numbers 1 to 12, and warned that mild electric shock would occur at number "8". The criminals not diagnosed as Anti-Social Personality Disorder and the non-criminals showed increased GSR as the number "8"

approached, and dropped afterwards. The Anti-Social Personality Disorder criminals showed no change in GSR around the number "8".

ELECTROMYOGRAPHY (EMG)

Electrodes on the skin surface measure muscle activity. Electrical potentials, lasting 1-5 msec, that are associated with the contraction of muscle fibres are measured.

EXAMPLE 9L: ELECTROMYOGRAPHY

Budzynski, T.H et al (1973) EMG biofeedback and tension headache: a controlled outcome study, *Psychosomatic Medicine*, 35, 484-496

Biofeedback makes use of psychophysiological information to help the client realise the signs of tension and stress. An EMG measures the tension in the frontalis muscles, which can be associated with tension headaches

The client is trained to relax and see the relationship with the EMG readings. In time, the client will know the feeling in their facial muscles and can relax before the headache arrives.

GASTRIC SECRETIONS

Measurement of hydrochloric acid in the stomach or stomach motility (example 9M).

EXAMPLE 9M: GASTRIC SECRETIONS

Wolff, S (1965) *The Stomach*, Oxford University Press: New York

Details of a case study of "Tom" who because of surgery had a rubber tube for food directly into his stomach. This allowed a recording of gastric secretions.

These secretions increased when "Tom" was anxious or angry, and decreased when sad. This is a clear example of the relationship between emotional states and physical health.

REACTION TIME PARADIGM

Measuring reaction time is seen as an indirect way to understand thinking and perception. Example 9N uses it with socially phobic participants.

EXAMPLE 9N: REACTION TIME

de Jong, P.J et al (2001) A reaction time paradigm to assess (implicit) complaint-specific dysfunctional beliefs, *Behaviour*

Students known to suffer from social phobia were compared with a control group. The task was to respond to words on the computer screen, and their reaction time and error rates were measured.

The words were either neutral (eg: attic), or social cues (eg: blush), and positive (eg: succeed) or negative outcomes (eg: fail). Generally the social phobia group had a different reaction time to social words whether the association was negative or positive outcome.

They were quicker than the control group when social words aired with negative outcomes and slower when with positive outcomes. This shows evidence of the belief and associations of the social phobia group; ie: quicker to perceive negative aspects of social situations.

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